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GASTRIC ULCER *

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Ulcer of the stomach is a more serious condition than ulcer of the duodenum but fortunately is less frequent, our statistics showing twenty-seven of the stomach to seventy-three of the duodenum. Gastric ulcer is the more serious because of the resulting deformities which permanently cripple the stomach and, when extensive, interfere with gastric digestion and motility. The mechanical condition can be relieved by operation, but the physiologic function of the stomach is often more or less permanently impaired. In ulcer of the duodenum, the gastric motor and secretory functions are not disturbed, and in the presence of gastro-enterostomy, are continued in an efficient manner.

Fig. 1.—Musculoperitoneal flap with gastrohepatic omentum and adhesions raised, exposing the ulcer. Note pyloric veins.

Acute perforation in ulcer of the stomach is less common than in ulcer of the duodenum, but in the former there is less probability of the ulcer being protected by adhesions. The gastric capacity is large so that considerable contents may escape. Since the contents are relatively much less sterile than in the duodenum, there is a greater chance of perforation producing general septic peritonitis. When operations are performed for acute perforation of gastric ulcer, the opening will often be found in the center of a large calloused area, making closure difficult.

Hemorrhage occurs in both gastric and duodenal ulcers with about the same degree of frequency and danger, but in the stomach it may be gastrotoxic in origin. So true is this that the large majority of severe hemorrhages from the stomach which are not preceded or followed by the ordinary signs and symptoms of ulcer are not due to ulcer but to gastrotoxic conditions the result of some type of gastro-intestinal or hepatic poisoning.

There is, in gastric ulcer, the ever present danger of cancer developing on the ulcer, a danger to which duodenal ulcer does not appear to be liable. Finally, the operative procedures which must be carried out for the relief of gastric ulcer are more serious than in duodenal ulcer; there is, moreover, a somewhat larger mortality and a somewhat smaller degree of certainty of cure. The history and clinical symptoms of a typical duodenal ulcer are so distinctive that, as Moynihan[1] has pointed out, the diagnosis might be made by correspondence; but many duodenal ulcers are not typical in their symptomatology and this is even more true of gastric ulcers. Therefore, in a very considerable percentage of cases, an exact differential diagnosis between duodenal and gastric ulcer could not be established until the advent of fluoroscopy.

In duodenal ulcer, hyperperistalsis of the stomach and deformities of the cap and, if obstruction exists, bismuth retention, give a typical appearance, and are almost as typical as the roentgenographic appearance of the niche in gastric ulcer and the appearance of hour-glass and other deformities.

Usually, the pain in duodenal ulcer comes later and radiates from the epigastric midline to the right; in gastric ulcer it may radiate to the left. When posterior adhesions of gastric ulcer exist, especially when the crater involves the pancreas, pain in the back is a frequent symptom.

Gastric ulcer is more frequent in men than in women, 71 males to 29 females, and is single in the large majority of the cases. The proportion in duodenal ulcers is 83 males to 17 females.

The occurrence of carcinomatous change in gastric ulcer has been a mooted question from those who

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Moynihan, Sir Berkeley: The Gifts of Surgery to Medicine, Address, Brit. Med. Jour., 1913, ii, 169.

believe with Aschoff[2] that it is a comparatively rare phenomenon, to those like Moynihan,[1] Wilson,[3] MacCarty[4] and others, who believe that it is a very frequent condition. The opinion of the postmortem pathologist who studies only the end results has no such value as the opinion of the clinical pathologist who has an opportunity to make the examination during

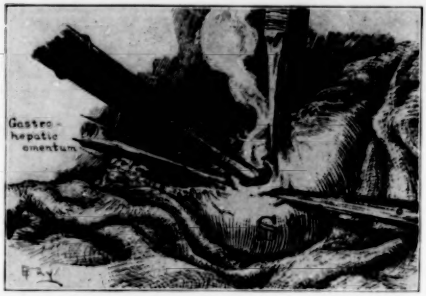

Fig. 2.—Excision of the ulcer by means of the Paquelin cautery.

the life of the patient, an opportunity which the operative removal of gastric ulcer and carcinoma has made possible. Fütterer[5] pointed out the relation of fish-hook ulcer to gastric carcinoma and presented proof that malignant change actually took place. Wilson[3] and MacCarty[4] from the study of a large number of specimens showed that it was not the base but the overhanging margin of the ulcer which became carcinomatous. A review by Wilson[6] of the later histories of 19 cases in which a gastric ulcer had been excised and diagnosed as probable early malignancy, in 1909, has been of very great value in clearing up the question, as four of these patients have since died of gastric carcinoma. Accepting as correct Aschoff's[2] criteria that if the base of the ulcer is carcinomatous the ulcer has been carcinoma from the beginning, Wilson was able to show in the excised specimens that the carcinoma had developed on the margin of the ulcer, as the base was of cicatricial tissue and free from cancer.

A study of the cases reported by von Eiselsberg[7] is interesting. He shows from the ultimate history of patients operated on in his clinic for gastric ulcer that 10 per cent. have since died of cancer of the stomach. The differentiation between ulcer of the stomach and duodenum was not so well established at the time these operations were made as now and the series showed few duodenal ulcers. It may be surmised that a percentage of the ulcers near the pylorus were duodenal, not gastric, and yet had been classified with the gastric. Since a duodenal ulcer rarely undergoes malignant change, this would increase the relative percentage of secondary gastric malignancy by whatever that error may have been. Analyzing von Eiselsberg's[7] statistics still further, it is found that thirteen patients died with carcinoma following operation for ulcer. The total number of deaths was forty-one. In other words 32 per cent. of all the deaths following operation for gastric ulcer were from gastric cancer. Recent data from the clinics of Payr-Perthes, Küttner and others show the same results.

Wilson[3] has contributed materially to the theory that detached fragments of functionating gastric epithelium buried in the ulcer by scar tissue may be the starting point of carcinomatous change. While it is not justifiable to say that all carcinomas of the stomach have their origin in ulcer, there is sufficient evidence to show that a preceding lesion in the gastric mucosa is practically always present before carcinoma develops. The prevailing skepticism on this point is not justified by the facts and tends to prolong medical treatment

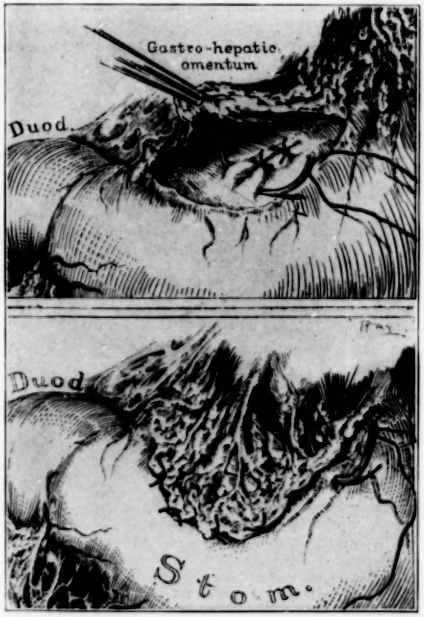

Fig. 3.—Upper figure shows closure of the gastric opening with chromic catgut and interrupted silk sutures. The lower figure shows the flap reapplied.

of chronic cases which would be more promptly treated by the surgeon were the carcinoma liability in addition to the ulcer risk and disability better understood.

Opinions as to the medical cure of ulcers are based on the frequent cessation of symptoms which, for that matter, occurs with or without treatment. When supposedly cured cases are operated on during the quies-

2. Aschoff, L.: Ueber die mechanischen Momente in der Pathogenese des runden Magengeschürs und über seine Beziehungen zum Krebs, Deutsch. med. Wchnschr., 1912, xxxviii, 494.

3. Wilson, L. B.: Studies in the Pathology of Early Gastric Carcinoma, Colorado Med., 1914, xi, 366.

4. MacCarty, W. C.: Precancerous Conditions, Jour. Iowa State Med. Soc., 1914, iv, 1. Wilson, L. B., and MacCarty, W. C.: Pathologic Relationships of Gastric Ulcer and Gastric Carcinoma, Am. Jour. Med. Sc., 1909, cxxxviii, 846.

5. Fütterer, G.: Treatment of Chronic Round Ulcer of the Stomach, THE JOURNAL A. M. A., Jan. 11, 1902, p. 76.

6. Wilson, L. B., and McDowell, I. E.: A Further Report of the Pathologic Evidence of the Relationship of Gastric Ulcer and Gastric Carcinoma, Am. Jour. Med. Sc., 1914, cxlviii, 796.

7. Von Eiselsberg, F. A.: The Selection of the Method of Operation in the Treatment of Gastric and Duodenal Ulcer, Lancet, London, 1914, ii, 296.

cent interval, the ulcer is not found to be cicatrized, but unhealed. The roentgenogram shows the same condition. While no one would contend that every gastric ulcer should be surgically treated, we at least should agree that if permanent cure does not take place within a reasonable period, other things being equal, the patient should have surgical treatment.

Fig. 4.—Pyloric half of stomach removed; (*a*), ends in crushing clamps; (*b*), sutures placed for closing ends of duodenum.

Thirty per cent. of all cancers in civilized man are in the stomach. The relative infrequency of the disease in primitive man and the lower animals suggests that there is some cause for this preponderance; that is, since the food of man and the lower animals is of the same character there must be something in its preparation or method of taking which predisposes civilized man to gastric cancer. There are many well-known illustrations of the fact that chronic irritation from heat disturbs the epithelium, thus making malignant disease possible. It has been shown that when a considerable quantity of fluid is taken into the stomach it passes by the canalis gastricus[8] along the lesser curvature and directly to the duodenum without mixing with the food mass in the fundus. This is exactly the situation of 85 per cent. or more of all ulcers and cancers of the stomach and ulcers of the duodenum. Food is cooled during mastication but liquids are often swallowed hotter than can be borne comfortably in the mouth. One cannot help thinking that hot drinks may be one of the most important irritative causes of chronic ulcer and precancerous lesions. Extreme cold may have the same effect. Primitive men and animals do not take their drinks hot and seldom have gastric cancer.

PYLORIC ULCER

The location, size and relations of gastric ulcer are extremely important from a surgical standpoint. The conditions created vary from the simple problems presented by a pyloric ulcer with obstruction, to those more complex problems represented by hour-glass contractures and extensive posterior ulcerations involving the pancreas. Ulcer of the pyloric end of the stomach and antrum should not be mistaken for duodenal ulcer. When ulcer occurs in the terminal one and one-half inches it is prone to develop a tumor, which, with the edema and obstruction, may and probably will be mistaken for carcinoma. When operating during an exacerbation an unusual amount of hypertrophy and edema in the immediate vicinity of such an ulcer will be found. The mass can often be felt through the abdominal wall on palpation. Cases are frequently reported in literature in which the two-stage operation for cancer of the stomach was planned and after a preliminary gastro-enterostomy the tumor completely disappeared. It is reported that one of Billroth's early patients on whom gastro-enterostomy was done for supposed carcinoma of the stomach, lived twenty years following operation. In our earlier experience several patients in whom a gastro-enterostomy was done for what appeared to be a fixed, inoperable malignant growth of the pyloric end of the stomach, clinically not distinguishable from cancer, lived five years or more following simple gastro-enterostomy. With increasing experience one finds that there are differentiating signs between pyloric cancer and ulcer when the tumefaction is exposed. A greater amount of edema, more extensive adhesions and more fixation occur in ulcer than usually occur in cancer of the same size. Ulcer does not present those little separated carcinomatous foci in the vicinity of the growth from dissemination just

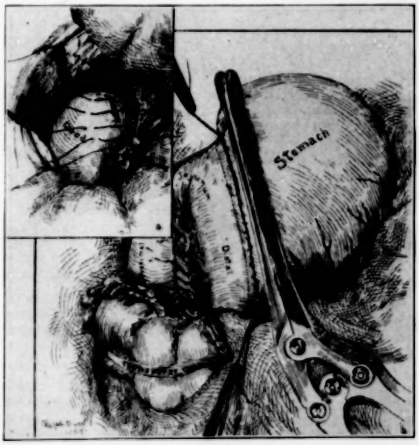

Fig. 5.—(*a*) Sutures in position for final closure of duodenum; *b*, jejunum, close to its origin, brought through an opening made in transverse mesocolon and sutured with interrupted silk sutures to posterior wall of stomach. Dotted line along jejunum shows proposed incision for gastro-intestinal anastomosis. Crushing clamp to be removed to open up gastric cavity for the anastomosis.

underneath the peritoneum. The glands are usually enlarged in both ulcer and cancer, and the removal of such glands which do not show cancer is unfortunately not conclusive, because glands enlarged from sepsis often exist in connection with cancer but in which

8. Jefferson, G.: The Human Stomach and the Canalis Gastricus (Lewis), Jour. Anat. and Physiol., 1914-1915, xlix, 165.

the glands themselves have no malignant cells. MacCarty and Blackford[9] have called attention to the fact that the size of a regional lymphatic gland is no criterion of the presence or absence of gastric cancer.

In the differentiation between pyloric ulcer and ulcer of the duodenum, the pyloric veins are an important diagnostic aid (Fig. 1). Above and below the pylorus

Fig. 6.—Entire end of stomach anastomosed to jejunum posteriorly with interrupted silk and a through-and-through continuous catgut suture which is being continued on to anterior surface.

short, stumpy veins come up on each side and give off one or more veins, sometimes anastomosing across the anterior surface, sometimes ending in a little spray of vessels. Once having observed the peculiarity of these pyloric vessels, which are quite different from those in any other situation on the stomach, differentiation is easy.

The Rodman[10] operation of pylorectomy and partial gastrectomy for this particular group of ulcers is remarkably well adapted to give relief; it removes the cancer liability and also a considerable portion of the acid-forming part of the stomach and this removal is of importance in reducing the possibility of the production of that rare but serious after-result of gastro-enterostomy, the jejunal ulcer. It should be remembered, however, that the mortality of the Rodman operation is somewhat greater than simple gastro-enterostomy, and that simple gastro-enterostomy will usually cure the patient. The Rodman operation, therefore, should be reserved, first, for those patients in whom the physical conditions are such that the operation can be performed with a minimum risk, and, second, for those patients in whom the possibility of cancer amounts to a probability, so that the increased risk of the operation will be more than counterbalanced by the benefits to be derived from it.

9. MacCarty, W. C., and Blackford, J. M.: Involvement of Regional Lymphatic Glands in Carcinoma of the Stomach, Ann. Surg., 1912, lv, 811.

10. Rodman, W. L.: Excision of the Ulcer-Bearing Area in Gastric Ulcer, THE JOURNAL A. M. A., Sept. 17, 1904, p. 801.

ULCER OF THE LESSER CURVATURE AND ANTRUM

The work of Forssell[11] in showing the gastric tendon of the lesser curvature of the stomach is very important in relation to ulcer of the lesser curvature, and explains why the simple excision of an ulcer without gastro-enterostomy may fail to effect a cure even though the pylorus be not obstructed. It would appear that the portion of the greater curvature of the stomach which corresponded in its musculature to the lesser curvature at the seat of the ulcer is often permanently crippled by the ulcer, and that this condition was not overcome by the excision of the ulcer. A considerable percentage of our cases of ulcer of the lesser curvature in which excision had been done later required gastro-enterostomy and this operation is now performed at the time the excision is made. Two deaths have occurred after excision of a simple ulcer of the stomach, from continuous hemorrhage coming on in the second week. The first week following the excision the patients did well; in the second week hemorrhage into the stomach appeared, at first not serious, but gradually becoming severe. As a last resort in each case, gastro-enterostomy was done but without avail. It was shown at postmortem that the bleeding did not come from definite vessels. The mucosa of the stomach had failed to unite and had widely retracted, leaving the muscular coat exposed in the lumen of the stomach, and this was the source of the oozing blood.

Fig. 7.—Operation completed and end of stomach drawn completely through opening in transverse mesocolon. Margin of opening sutured to gastric wall.

Following these two unfortunate results, Balfour[12] (Figs. 2 and 3) began the use of the actual cautery to destroy the ulcer. His method is as follows: The

11. Forssell, G.: Les rapports entre les formes radiologiques de l'estomac humain et l'architecture musculaire de la paroi stomacale, Arch. d'élec. med., 1912, xx, 529.

12. Balfour, Donald C.: Treatment by Cautery of Gastric Ulcer, Surg., Gynec. and Obst., 1914, xix, 528.

peritoneal and muscular coats are dissected back from the ulcer in the shape of a flap. Then the Paquelin heated to a dull red (just hot enough so that it will not stick) is pushed through the ulcer, gradually heating the entire calloused area. The cautery opening is closed with chromic catgut and interrupted silk, the flap of peritoneal and omental tissues replaced and, finally, gastro-enterostomy is performed. Experiments which Balfour and Mann conducted on dogs showed that the cautery sealed the gastric mucosa to the muscular tissues and that the scar left was almost imperceptible. Experience with this method in a very considerable number of cases has steadily given good results. When there is suspicion of malignancy, a bit of tissue is excised for microscopic examination before using the cautery. The use of the cautery in these cases, however, destroys the ulcer and the diseased mucosa in its vicinity so thoroughly and coagulates, as shown by Percy, tissues beyond to such an extent that one might expect the method would be as effectual as local excision against early malignant disease. Of course, if malignancy is shown to exist, resection is indicated.

In some cases in our clinic in which the cautery and gastro-enterostomy were combined the pylorus was also blocked to force the food out of the gastro-enterostomy opening. The results have been excellent in either case and blocking the pylorus has not seemed to have added anything of value to the operation.

LARGE ULCERS OF THE BODY OF THE STOMACH

Large ulcers occupying the body of the stomach, when the callus and ulcer are too large for the cautery operation of Balfour,[12] are best treated by the sleeve resection, that is, the removal of a segment of the stomach including the ulcer, and an end-to-end anastomosis of the two fragments. This shortens the stomach considerably but gives an excellent permanent result. Just why this operation, in which the corresponding part of the greater curvature is removed at the time the ulcer is excised, should leave a stomach with good motility while excision of the ulcer without removal of the segment of the greater curvature of the stomach leaves it with poor motility is an interesting conjecture.

The most serious ulcers are those of the body of the stomach involving the posterior wall. These ulcers are usually of large size and often involve the pancreas. At times there is an ulcer with a foul crater of considerable size containing food remnants and in which it is extremely difficult to tell whether or not malignant disease is present. In a general way it can be said that where the actual crater of the ulcer is larger than a silver dime the majority of gastric ulcers will prove to be undergoing malignant change. On the posterior wall of the fundus of the stomach this is not so generally true, for, while many of these ulcers are malignant, some extensive ulcers are benign. For such ulcers, if not too large, the transgastric operation[13] will be found satisfactory. The anterior wall of the stomach is opened, the ulcer excised from within the stomach and the gap sutured from within. The base of the ulcer may be pancreatic tissue; if so, it can be shaved off with a sharp knife until all the exposed part of the callus has been removed, or it may be destroyed with the acutal cautery. If it is possible to gain access to the posterior wall of the stomach, a few musculoperitoneal sutures may be placed to protect the sutures applied from within the gastric cavity, but experience has shown that these are not essential. We have, however, taken the precaution to carry a strip of folded rubber tissue to the pancreatic lesion after covering it with omental grafts. As none of these cases have had any discharge following such drainage, it can be looked on as unnecessary. I am convinced, however, that the more extensive ulcers in this situation are better treated by radical removal of the entire distal end of the stomach including the ulcerated and contractured area, and then the end of the gastric pouch anastomosed directly into the side of the jejunum. This furnishes perfect drainage, gets rid of the entire acid-forming part of the stomach, and insures the patient against recurrence. Comparatively few cases are sufficiently serious to warrant so extreme a procedure, but in several instances, after the failure of less radical means to give relief, and especially in the presence of secondary jejunal ulcers, I have adopted this plan with great satisfaction.

13. Mayo, W. J.: Transgastric Excision of Calloused Ulcer of the Posterior Wall of the Body of the Stomach, Ann. Surg., 1910, lii, 797.

HOUR-GLASS STOMACH

The hour-glass stomach, if a single loculus, may be treated by gastrogastrostomy after the Watson method or by the sleeve resection just described. We have found the results of either of these operations satisfactory. A gastrogastrostomy which is planned in a general way after the Finney gastroduodenostomy will give excellent results. A considerable number of hour-glass stomachs have secondary obstruction in the vicinity of the pylorus, or they are associated with duodenal ulcer. In either case gastro-enterostomy in addition to the treatment of the hour-glass condition is necessary (Figs. 4, 5, 6 and 7). Where several loculi exist, increasing the lumen of each by a plastic operation of the Heinke-Mikulicz type so that they shall be converted into one large cavity, and then making a gastro-enterostomy is most efficient.

THE RELATION BETWEEN GASTRIC ULCER AND CANCER*

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This subject has been discussed so frequently and so thoroughly, especially since the attention of the surgical world was again directed toward its importance by the classical address of President Rodman[1] made before this association, that it would seem useless to bring this feature into discussion again were it not for the fact that its importance from the point of view of prophylaxis and the bearing its consideration by the practical surgeon has on prognosis must be appreciated in order to decrease the percentage of mortality from cancer of the stomach, which now, according to Dowd, equals nearly one third of all deaths caused by cancer in the entire body.

Regarding the frequency with which cancer is found in patients giving a history of ulcer, authorities differ so widely that, for the reasons for this great difference, one must look to the manner of taking histories in these cases and to the values placed on certain symptoms. Smithies[2] gives a series of 712 cases in

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Rodman, W. L.: Excision of the Ulcer-Bearing Area in Gastric Ulcer, THE JOURNAL A. M. A., Sept. 17, 1904, p. 801.
2. Smithies, Frank: Symptoms and Signs of Gastric Cancer, THE JOURNAL A. M. A., Feb. 20, 1915, p. 643.

which 61 per cent. belonged to a group which gave histories of ulcer.

Only a few months earlier F. Friedenwald published a careful study of 1,000 cases[3] in which he gave 7 per cent. of cases with a direct history of former ulcer and stated definitely that, in this series of cases, in only 23 per cent. could the cancer have developed on an ulcer.

It is necessary only to select the report of these two well-known, conscientious, capable and reliable authors to prove that an analysis of case reports cannot give us data of great value on this subject, not because of probable unreliability, but because one could have the same house officers write history after history of patients who had definite symptoms of ulcer in the past without recording the facts on which one could make a diagnosis. One can make an analysis which will have value only when the histories of all cases under consideration have been written by men who have followed the cases in which a diagnosis of gastric ulcer has been made into the operation room where the diagnosis has been proved or disproved. I have personally tested this phase many times and am convinced that every careful clinician who will direct his attention on this point will agree with me on making a series of tests. To my mind, the positive statements which Graham[4] made on the relation between ulcer and cancer years ago were very significant because he followed all of his cases into the operating room and all the specimens obtained into the pathologic laboratory.

In the personal experience of each individual surgeon who has specialized more or less in the treatment of diseases of the stomach, one finds that at first many cases must have escaped detection, while, according to Cabot, is only 72 per cent. of the cases admitted to the hospital with a diagnosis of cancer of the stomach was cancer found at the necropsy. It is true that when one's attention has been once directed thoroughly to the symptomatology of gastric ulcer, careful attention to the history alone gives a very reliable basis for a positive diagnosis. It is also true that, in clinics in which many cases of gastric ulcer come for operation, even the younger assistants learn to recognize the symptomatology, but the histories one finds in the hospitals which were written only a few years ago are quite free from the appreciation of these symptoms.

On the pathologic side the evidence is still more misleading, because until very recently but a very small proportion of the cases in which cancers were removed surgically from the stomach came early enough to enable the pathologist to recognize the presence of an ulcer margin on which the cancer had been engrafted. It is of course quite improper from a scientific point of view to give any value to the observation that in advanced cancer no trace of ulcer can be found, because it is the development of the cancer from a minute beginning to its ultimate growth which must necessarily remove every evidence of the existence of the ulcer which was present at the time of the first appearance of the cancer.

In order, then, to have a reasonable basis for our judgment, we must consider only specimens in which the cancer cannot have destroyed the evidence of ulcer at any time before the specimen was obtained, in case this was present as a lesion on which the cancer was primarily planted.

Thomson and Graham[5] made an interesting study on "Fibromatosis of the Stomach and Its Relationships to Ulcer and to Cancer," which aids greatly in clearing up some of the evidence which has generally been misconstrued. It seems clear from their exposition that "the ulcer which is complicated with fibromatosis may also become the starting point of cancer."

Rodman, Mayo and others have constantly directed our attention to the significant fact that the ulcer-bearing areas of the stomach are also the areas most commonly occupied by cancer. This has led to much discussion in two directions. On the one side, it has been claimed that, because of this fact, all ulcers should be excised at the time of operation in order to remove the possibility of the development of a cancer on the base of an ulcer. On the other hand, the wisdom of this position has been doubted because of the observation of Kocher, who found "no carcinoma in eighty patients one to twenty-two years after operation for ulcer,"[6] and this fact has been construed to mean that cancer would not have developed in any of these ulcers had they not been operated on, while in fact it means that, these ulcers being cured before cancerous infection had taken place, the exciting cause was permanently removed.

Other observers have followed large numbers of cases with the same result, and some of them have concluded from this that there could be no definite causal relation between ulcer and cancer. Again, the fact that cancer occurs only very rarely in the duodenum, while it occurs so frequently near this point in the contiguous mucosa of the stomach, has been used as an argument against the causal relation of ulcer and cancer. If we bear in mind, however, the fact that the conditions under which these two forms of ulcers exist are entirely different, notwithstanding their proximity in location, the foregoing argument loses all of its force. On the side of the stomach there is a great deal of trauma because of the violent action of the muscles of the pyloric end. This causes a great increase in the amount of irritation, and we know from the study of cancer in other parts of the body that there is a direct causal relation between irritation and the formation of cancer. These facts were all brought out so clearly by Coffey[7] that they need not be repeated here. Moreover, intestinal contents are held in contact with the ulcerated surface on the gastric side of the pyloric sphincter for a considerable period of time each day, while on the duodenal side these contents are forced on immediately on entering the duodenum. This has been demonstrated many times by means of the use of a bismuth meal and Roentgen-ray screening. Recent observations, especially those of Abelmann and Carl Beck, seem to point forcibly toward the possibility of inoculation with cancer virus, quite different from our former conception that cancer is amenable to transplantation but not to infection. That transplantation of cancer from points in the upper portion of the alimentary tract to the stomach is possible has been shown by

3. Friedenwald, J.: Clinical Study of One Thousand Cases of Cancer of Stomach, Am. Jour. Med. Sc., November, 1914.
4. Graham, C.: Cancer of the Stomach, Boston Med. and Surg. Jour., Nov. 12, 1908, p. 635.
5. Thomson, A., and Graham, J. M.: Ann. Surg., 1913, lviii, 10
6. Quoted from Murphy's Clinics, April, 1914.
7. Coffey, R. C.: Cancer of the Gastro-Intestinal Tract, Northwest Med., May, 1908, p. 165.

the remarkable studies of Fütterer and is supported by analogy in other parts of the body.

We find here, then, on one side of the pyloric sphincter conditions which are favorable to cancer inoculation, while on the other side these conditions are absent, the only similar conditions being the defect in protection against inoculation because of the lesion in the mucous membrane.

Whether the presence of an acid medium on the gastric side and an alkaline medium on the duodenal side has any relation to the cancer infection cannot be determined at the present time, although the rareness of occurrence of cancer in the liver, which acts as a filter for all of the blood, would indicate that there may be inhibitory qualities in the bile.

Whenever experimental work shall have advanced sufficiently to convince pathologists generally that cancer is due to an infection, of which I am fully convinced not only from clinical observation and the careful study of many hundreds of human specimens but also from a study of the experimental work of Abelmann and Beck, the causal relation between ulcer and cancer of the stomach will be as clear as the relation between ordinary wounds and pus infection is today.

The observation that ulcer does not commonly result in cancer after relief from operation for the former condition would indicate that the ulcer simply acts as an opening through which an infection of carcinoma can conveniently enter, just as an abrasion on the skin will permit the entrance of the germs causing acute infections, and that so soon as the ulcer has healed the patient is again fairly protected against cancer infection.

The experiments of Rosenow seem to show a definite relation between streptococci infection with a definite selective quality and the formation of gastric ulcer. It may be possible in time to eliminate the formation of these ulcers by preventing the introduction of these streptococci. The observations of Gaylord, Marine and Marshall concerning the production of cancer in fish with food containing fecal excrement seems worthy of consideration in connection with this subject.

There can be no doubt but that much unclean material could easily be eliminated from our food, or, if it is present in the food in such a form that it cannot be eliminated, it can at least be sterilized by careful cooking. I refer especially to uncooked vegetables which are grown in soil filled with manure.

One of the most convincing arguments, from the statistician's point of view, in favor of the theory that cancer of the stomach usually develops on an ulcer is based on the fact that there is the same relative preponderance of cancer in men over women that we find in regard to ulcer, the condition being nearly twice as common in the former as in the latter. Were there not a definite causal relation between ulcer and cancer, it does not seem reasonable that this proportion could be identical in the two sexes.

During the past ten years I have personally studied all cases of cancer of the stomach removed in our clinic with a view of determining whether its beginning was in the margin of an ulcer, and in all of the cases not too far advanced for reliable observation I have been able to find evidence of the previous existence of an ulcer. In the late cases neither positive nor negative evidence could be found.

Regarding the evidence from the history, from previous diagnosis from those treating the case and from laboratory findings I have found that one who is thoroughly careful in his search for all facts which have a bearing on the fact that cancers are implanted on ulcers can always elicit from the patient by careful cross-examination, a sufficient amount of evidence in the history to support this position, while if one must depend on the facts put down in the ordinary history written by house officers whose attention is not centered on this feature, one will be disappointed in his search for typical ulcer symptoms. It would, of course, be improper to deny the presence of an ulcer on the evidence found in histories of cases of gastric cancer written by assistants whose attention had not been directed to the importance of carefully searching for relevant facts, although these histories may be quite bare of any evidence which would establish the presence of ulcer beyond a doubt.

In order to obtain statistics with value in this direction we must consequently give especial attention in the future to this feature. It is significant that most surgeons with a very large experience in the operative treatment of gastric ulcer and cancer seem convinced of the positive causal relation of the two conditions. This has again been brought out by Moynihan;[8] he fully agrees with the views of W. J. Mayo, whose enormous experience alone would be sufficient to establish the causal relation between ulcer and cancer beyond a doubt.

Coming to the practical end of the subject, it seems clear that, if cancer of the stomach is usually implanted on ulcer, we are in position to reduce the mortality from this cause to a very marked extent, first, by eliminating the various causes of gastric ulcer so far as possible; second, by securing the permanent healing of these ulcers when they first appear, primarily by making an early diagnosis and instituting carefully regulated long-continued dietetic treatment and hygiene; secondarily by surgical treatment; in the third place by preventing the use of unclean, uncooked foods, and in the fourth place by excising all suspicious ulcers.

My observations seem to warrant the following conclusions:

1. In all of the recent or early cancers we have encountered, the growth was located in the edge of an ulcer.

2. By careful study of the history of late cancer, in which the original ulcer had, of course, been obliterated by the growth, it was possible to elicit a previous ulcer history.

3. In studying the development of cancers in other parts of the body we find that a point is usually selected which has been subjected to long-continued irritation, as in the lip, face, rectum or uterus.

4. The fact that there are so few cancers of the duodenum as compared to cancer of the stomach can be explained by the fact that, while there is stasis in the stomach, there is none in the duodenum. In other words, while food containing the cancer germs will remain in contact with the ulcer of the stomach sufficiently long to permit the germs to become implanted, this is not the case in the duodenum.

5. It is possible that these germs may require an acid medium to stimulate them to attack the tissues.

8. Moynihan: Abdominal Operations, Ed. 3, i, 287.

6. It is relatively an easy matter to overlook the history of a previous gastric ulcer, because in the absence of severe hyperacidity the pain in these cases is frequently not sufficient to be remembered through the great distress from which the patient suffers after the cancer has developed.

7. In our experience a large majority of these patients have habitually eaten large quantities of food which was certain to be infected with manure, such as lettuce, celery, radishes, etc., so the introduction of the cancer germ into the open wound of the ulcer could easily be explained.

8. These gastric ulcers are of such long duration that the focus of irritation might readily serve to locate cancer germs which might have entered the circulation through some other portal.

9. This does not indicate that every patient who has ulcer of the stomach will ultimately have cancer, any more than that every soldier going to war will be shot, but it shows the wisdom of closing this opening for the entrance of cancer by curing the ulcer early and permanently.

10. Much attention should be given to the early history of these cases, and to the prevention of feeding these patients with unclean, uncooked foods.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MAYO AND OCHSNER

DR. EMMET RIXFORD, San Francisco: These papers have brought together the knowledge of the world on the subject of gastric ulcer and gastric cancer, together with the results of experience of Drs. Mayo and Ochsner. There has not been in the minds of most of us much doubt as to the relation of gastric ulcer to gastric cancer since the paper of Dr. Rodman (Trans. Am. Surg. Assn., 1908, xxvi, 189) which showed a definite sequence of the one on the other, and it is interesting to learn after these years that there has been very little added to what Dr. Rodman then said. In regard to etiology, little has been produced that is of interest, and we have not gone far beyond the point reached long ago that cancer develops at points of irritation. We are as far as ever from finding the organism, if there is such an organism. In the present state of knowledge the most that can be done practically in the prevention of cancer is to lessen the effects of chronic irritation on such lines as were clearly laid down by Drs. Mayo and Ochsner. We know what to do with the well-developed cancer of the stomach, and we also know full well what is the outcome. The indications for abdominal section are so much wider in the development of modern surgery that we see stomach conditions at a much earlier date; we are therefore put to it to make a differential diagnosis between ulcer and cancer in the operating room when the abdomen is opened. We do not always have a competent pathologist with us, and sometimes we yield to temptation to operate in some other place than our own operating room and cannot take the pathologist along. Not always is cancer found, when present, even when the pathologist has the best opportunity to make his microscopic examination. I recall a gastric ulcer with secondary carcinoma implanted on it (at least that was my operative diagnosis) and I made a wide excision and sent the tissue to the pathologist for examination. He found no carcinoma and I regretted having done an unnecessarily extensive resection. Later the patient returned with definite carcinoma whereupon the pathologist in reexamining the original specimen, making almost serial sections, found small areas of carcinoma. If, however, we can have a microscopic examination by a competent pathologist at the time of operation, many errrors will be eliminated and a more logical and more radical operative procedure inaugurated.

DR. WILLIAM L. RODMAN, Philadelphia: For fifteen years the question has, to me, been a plain one. Gastric ulcers demand radical treatment; for, even if we waive the question as to whether or not benign ulcers of the stomach tend to become malignant, there is enough evidence to justify radical treatment in every case of gastric ulcer where the lesion is mobile or can be mobilized. Even though you ignore the liability to cancer, I insist that excision should be practiced because the danger in excision is only one-third that from perforation, and only one-half the danger from hemorrhage, to say nothing of such complications as subphrenic abscess, hour-glass stomach and conditions other than cancer. But more important than all these is malignant transformation. In 1839 Cruveilhier, in 1848 Dittrich and in 1849 Rokitansky and men of their type emphasized the danger of malignant transformation, and it was reading these authors that made me, in 1900, insist on excision or radical treatment of gastric ulcer. Sir Berkeley Moynihan, when here in 1903, said to me: "Rodman, you are wrong; the estimate of Hauser that 6 per cent. of carcinomas are preceded by ulcer, is large enough and would more than include ulcers undergoing malignant transformation." When he came back in 1908, in a paper read before the American Surgical Association, he said that, after careful examination and investigation of his cases, more than 72 per cent. were undoubtedly preceded by ulcer. Mayo Robson, as well, has changed his views, now advocating excision of the ulcer-bearing area on account of 59 per cent. of his gastric cases having been preceded by ulcer. The Rochester Clinic shows a much larger percentage and W. J. Mayo further says that no one can from inspection and palpation tell definitely whether a lesion is benign, and that many cases supposed to be benign subsequently were found to have been malignant. While it is true that ulcers at the pyloric end of the stomach are particularly prone to undergo malignant change, and that ulcers in the larger and more expanded four fifths of the stomach are not so likely to become malignant, too much has been said on this subject, because there are cases on record in which ulcers in the larger portion have undergone malignancy. Cackovic reported such a case, so have I, and even if there were none, and we still ignored the possibility of malignancy, it is unwise to allow these ulcers to perforate, because that part of the stomach is always movable, does not form adhesions readily, extravasation quickly occurs, and such patients will not be rescued after perforation. The danger of perforation and hemorrhage from such ulcers is more than sufficient to demand radical treatment.

It is naturally gratifying to me to see the marked change which has taken place in the surgery of ulcer. When I first suggested excision of ulcer in the body of the stomach and pylorectomy for those at the pylorus (1900), it was considered much too radical and gastro-enterostomy was the operation almost universally practiced. The latter, as I then pointed out, was entirely inadequate and is generally so recognized, and excision and pylorectomy have become the operations of choice with those having the greatest experience in gastric surgery.

DR. W. I. TERRY, San Francisco: It seems to me that the question of carcinoma of the stomach following ulcer is a determined one. The frequency with which it occurs will be determined after the lapse of many years and particularly after a careful analysis of many cases which have been subjected to operation in the large clinics. The follow-up work of Dr. Peck throws light on several questions in the diagnosis of these conditions of the stomach, and when followed up thirty years from now we will have something very definite on which to base our statements. In the meantime, however, we have to do the best we can by these patients and treat them all as suspected malignancy and do the radical work by the Rodman, Coffey, Balfour or other approved method and then we shall have done our duty to the best of our knowledge.

DR. MILES F. PORTER, Fort Wayne, Ind.: To my mind the question of the etiologic relationship existing between ulcer and cancer of the stomach is a settled one, but as to what it is I do not think it is certain. Are we warranted in concluding that because gastric ulcer predisposes to carcinoma, that therefore the carcinoma is probably produced by a germ

and that this is the only explanation? Recent experiments have shown that the injection of raw sterilized albumin produces carcinoma, so, therefore, I think we should wait for more evidence before deciding this question. The practical point, however, remains the same. The same process devised for the killing of the germ by Dr. Ochsner will also cook the raw albumin. Gastric ulcerations allow the passage of raw albumin into the general circulation. It has been proved that animals, sensitized by the injection of raw albumin, are prone to cancer. I bring this point up for the purpose of putting a question worthy of further study. Dr. Rixford said that sometimes we operate in these cases when we have no pathologist present. Now I want to say that I think I have no business to operate when I have no pathologist present, and I say this with the kindliest sentiment in the world.

DR. A. E. ROCKEY, Portland, Ore.: I want to say a few words in reference to the etiology of carcinoma in its relation to ulcer. In a paper presented at the recent meeting of the Pan American Medical Congress, I advanced the hypothesis that carcinoma is not due to any single external cause, but that it is produced by a defensive reaction of the cells to a great variety of irritations. The result of any sufficient irritation to the cells, whether it be microbic, traumatic, radiant, thermic or toxic, is the death of the cells. The body is a community of individuals, which we call cells, that have both an individual existence, and a community relation with each other. Embryonal cells are the same in character until after their division into the germinal layers of the ectoblast and endoblast. In adult tissues there is a normal repulsion to admixture of the cells. When any irritation falls short of the death of the cells, there is produced a stimulation, which is defensive in character, and which is followed by an active karyokinesis to increase the number of the cells. The more rapid this defensive karyokinesis, when growth is closely balanced with destruction, the more nearly do the cells approach the embryonal type. There are fortunately only certain conditions in which this causes carcinoma. Irritation produces the same reaction in the mesoblastic tissue as it does in the epiblastic tissue, and to form cancer the basement membrane must be destroyed. In their common struggle for existence against any irritation, when growth and destruction are closely balanced, the cells lose their normal antagonism for each other, become irregular in their mitosis and the young cells from the epiblast become engulfed in those from the mesoblast, and cancer is begun. Being thus submerged, they cannot attain either normal anatomic perfection or physiologic activity. They retain the excessive karyokinetic tendencies of their immediate progenitors, and expend their energy in a reproduction that is both immature and irregular. Deflected from their proper place in the epiblastic layer, they infiltrate the mesoblastic tissue, which they destroy by pressure, and enter the lymphatics and form metastases. Dr. Ochsner has intimated that proof will presently be forthcoming of the specific microbic origin of cancer. What single microbic cause can we find suggested in cancer, where the source of irritation is so varied as that which we find in pipe smokers' cancer of the lip, betel nut chewers' cancer of the mouth, cancer of the breast following a single trauma, cancer of the abdominal wall in the natives of Thibet, who wear small charcoal stoves to keep the hands and body warm, or in Roentgen-ray cancer of the hands? We have searched too far, and have overlooked the very evident fact that a defensive reaction of the tissue cells to irritation that threatens their destruction is the cause of that irregular growth and displacement which we call carcinoma.

DR. J. CHRIS. O'DAY, Portland, Ore.: When I was an understudy of Miles F. Porter he taught me to regard cancer as the manifestation of epithelium running wild. I still believe it. If the theory of Dr. Ochsner is correct I would ask how the fecal matter gets to the mammae or the uterus, for do we not have cancer there? As to gastro-enterostomy in the presence of gastric ulcer, I have made it a rule for several years that when a gastro-enterostomy will short circuit the chyme from the ulcerated area it is the operation of choice. If it will not do this it is not the operation to do. When the ulcer is in the region of the pylorus, the beautiful results one obtains by this operation are known, but when the ulcer is higher, and the gastro-enterostomy will not short circuit the stream—in other words, the ulcerated area is still exposed to the irritation—it will do no good. As to Dr. Mayo's operation of opening the anterior wall and attacking the ulcer on the posterior wall from within, it seems to me there is something about that operation which he did not tell us. Personally I would be afraid to attempt it because my technic is such that unless I include peritoneum in my needle work, I would feel in danger. He did not tell us how he applied his sutures. From the illustrations it would seem that if the sutures yielded to the gastric juice before union had been firm, gaping or leakage might occur.

DR. C. G. LEVISON, San Francisco: The cure of cancer is not going to come from the surgeon, it must come from the physician. There is one point that must be accomplished before cancer can be cured and that is that we cannot succeed in getting good statistics until the cases are seen in their incipiency, which means that by the time gastric ulcer has been referred to the surgeon for operation cancer is already present in the advanced stage.

A case in point will illustrate this. A friend had returned from Europe with all of the manifestations and the cachexia of cancer of the stomach. He was seen at the club and I remarked to a mutual friend, I will tell you what will happen to this patient; he will be treated by the family physician who after six months will refer him to the surgeon for operation; at the operation the patient will be found to have an inoperable cancer of the stomach. After six months we were called in to operate and when the abdomen was opened an inoperable carcinoma of the stomach was found. Until these conditions have changed there can be no improvement in our statistics as far as ultimate cure is concerned. The development of cancer of the breast and stomach can be averted by operating in benign conditions, just as the gangrenous appendix has almost disappeared as the result of the interval operation.

THE DECOMPOSITION FOOD PRODUCTS AS CARDIOVASCULAR POISONS*

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To those who know the heart simply as a muscular pump, the function of which is to supply the various parts of the body with blood, the term "cardiovascular poison" will mean little more than a drug which causes the heart to misbehave or to functionate badly. Generally speaking, the heart is a much neglected study. The why and the wherefore of its phenomena, its minute anatomy and physiology, their relation to clinical and physical signs, and their influence on and response to the action of drug and other toxins, all form phases and spheres of heart study, a thorough grasp on which is as essential to intelligent bedside observation as it is to laboratory investigation.

It is well to realize that we know only two and perhaps only one true cardiac tonic, oxygen, and perhaps certain forms of sugar. On the other hand, it will be of advantage to forget the old belief that the heart is lacking in nervous tissue. We are often reminded that "there are few nerve elements in the heart, and none in the atrioventricular bundle," or in the other foci of cardiac nodal tissue. And yet it is no very recent discovery that, if any human organ is rich in its nerve supply, the heart is that one.

* Read before the College of Physicians of Philadelphia, May 5, 1915.

It is an excedingly important, and also a not recently acquired item of knowledge that, probably with a view to the maintenance of intracardiac pressure, one of the main nervous distributions in the heart is subendocardial. The sinus node contains a veritable network of vagal filaments, and the specialized nodal tissue itself is composed of cells and fibers which merge now into nervous structures and now into muscular. These are features of all nodal tissue, including that recently discovered in the intestinal wall by Arthur Keith, which seems to differ neither in structure nor in function from the specialized tissue of the heart.

Up to the present time we have failed to solve the functional riddle of the myriads of sympathetic ganglions in the heart. The mere knowledge of the existence of these structures is, of itself, important, even though for the immediate present we appear to have been blocked in our attempt to discover their exact method of working. Especially in relation to the administration of medicaments it is essential to realize that the heart is not simply a nerveless muscle. So in the matter of the assimilation of the foodstuffs it is essential to remember that the cardiac nerve structures enter in greater or less degree into the inception and the discharge of each and all of the main functions of the heart. Herein lies the cardiovascular significance of the toxic character of many of the end-products of the foodstuffs.

With this simple introduction, I wish to discuss briefly a class of cardiovascular poisons originating in the gastro-intestinal tract as the result of the decomposition of various articles used as food, and often exerting a powerful influence when an idiosyncrasy exists. I have chosen the term "cardiovascular" advisedly, in the realization that clinically and practically those substances which stimulate and strengthen and nourish the heart exert a like influence on the very similar tissues in its extension, as it were, the arterial tree. Just so, the substances which poison the tissues and deplete the forces of the heart tend to injure and to render incompetent the blood vessels. This does not mean, however, that the pharmacologic action of every drug is primarily and secondarily identical on the two, unless essentially poisonous for both.

The decomposition food products are at work from childhood to old age. Together with tobacco, they constitute, I believe, the chief underlying and causal factors in the production of the arterial changes and the hypertension which contribute so actively to the cardiac disease of later years. In babyhood the main influence in their production is usually an oversupply, less often today an unclean or improper form of food. This factor of gross overfeeding and consequent gastro-intestinal decomposition is operative, as a rule, throughout childhood and well past puberty. Occasionally it is continued through life. It exerts two influences on the heart, one toxic, the other mechanical. Beginning with the child's admission to the general diet of the family table enters still more forcefully the factor of indigestible food, not infrequently taken in unreasonable excess. We all eat too much for our individual needs; we all indulge in many things better calculated to disturb than to further nutrition, and most of us send them on their way toward the stomach and the bowel very imperfectly prepared for assimilation. As a direct result, whether babies, or adult working units, or old men and women, we have at all times within us digestive tubes much more foul than they should be, from which we absorb the poisonous end-products of not only an excess, and of improper pabulum, but also of the altogether suitable foods. The popular present-day name for this condition is intestinal stasis, and the surgeons are manifesting a cordial interest in Jackson's membranes, Lane's kinks, and similar obstructions as its cause. Our grandparents knew better, and though they stuffed the grandchildren from the breast to puberty, "too much food" was their lay diagnosis, and castor oil their very rational and effective cure. I think it fair to assume that a timely and intelligent and persistent use of the same regimen would relieve by prevention, if not cure, very many of the conditions diagnosed as Lane's kinks today.

Intestinal decompostion implies at once the manufacture and the absorption of toxic material, in part strictly chemical, in part purely bacterial, in part consisting of normal food end-products, poisonous perhaps to a given individual, though utilizable by the majority of human beings. These toxic substances act in one or all of three ways: (1) through a chemical toxemia and a direct poisonoing of the body tissues; (2) through a bacteremia, as in the frequent colon bacillus infections, and (3) by the formation of poisonous gases, which not only are in some measure absorbed, but also, by mechanically displacing and discommoding, embarrass organs above and below the diaphragm through gastro-intestinal distention.

In all three of these forms of food influence, the first recognizable effect is on the cardiovascular system. I have experimented on laboratory animals and on myself, and have questioned very carefully patients in my care with a view to gaining light on this point. From all three sources I obtain ample evidence that the heart and vasomotor system experience very early the influences of a food toxemia, of whatever nature. Usually there is a marked quickening of the cardiac action, often distinct palpitation; almost always in the acute stages (before collapse) there is a marked elevation of both the systolic and diastolic pressures. Later, as the heart begins to tire, the systolic pressure may fall and the rhythm become irregular. Not infrequently I have seen distinct signs of cardiac dilatation in the entire absence of abdominal distention, that is, not a mechanical embarrassment.

I have just finished a nine months' study of a giant tom cat in which were noted on a single meal per diem a normal pulse rate of about 100, a single formed stool, and an apparently well, lazy, affectionate cat. On two daily meals (one of milk, one of mixed food from the table) the cat ran a distinctly angry cardiac action and rate of about 120, its stools numbered two and three and were exceedingly offensive, and the cat was evidently irritable and ugly when disturbed. On three meals daily, two of them containing a small quantity of meat, the stools became numerous and diarrheic in character, and occasional blood streaking could be noted, the animal manifestly suffering from an intestinal inflammation secondary to the decomposition of food in excess. The cardiac action averaged from 120 to 130, and the apical impulse was no longer bounding and angry and of high tension; it was rather diffuse and weak, and an occasional irregularity could be detected. The heart and the vessels were incompetent as the result of a toxemia.

This series of experiments was carried out repeatedly on various kinds of foods, with identical results in all

instances. The excess of animal proteins would poison the animal more promptly than a strictly vegetable dietary, but the main factor was manifestly the excess of supply, and not the kind furnished.

Long before it had occurred to me to test out in a laboratory animal the theory of cardiovascular poisoning through decomposition food products, I had suspected the relation of cause and effect, owing to numerous personal experiences. For years I have been in the habit of taking either no third meal in the day, or else a simple saucerful of boiled rice with milk and sugar. I found that the moment this boundary was overstepped I began to receive signals from my cardiovascular system that were finally too definite to be ignored. Within an hour after a moderate evening (third) meal my whole body (not the abdomen) began to feel full and tense. The hands and feet, the thorax, the head, especially the skin surface, felt full and tense and hot. The pulse rate in a short time increased from 20 to 40 beats per minute. The systolic pressure (Stanton apparatus) has on more than one occasion risen to 160 and 170 (my normal is 130), and the diastolic to 110 and 120. After retiring I could feel my cardiac action from head to foot to a most uncomfortable degree. It seemed as though the bed responded to the cardiac impulse, so general was the hypertension and overaction. Always following such an experience, there would occur during the night hours, or during the next morning, several dark offensive, often liquid stools. Only on their evacuation would the toxemia and excessive cardiovascular tension disappear and I become comfortable.

I have questioned many intelligent and observant physicians and laymen, and find that my experience is not an isolated one by any means. As with the cat, the idiosyncrasy is not one of particular classes of foodstuffs. It is usually one of quantity and excess, though I learned long ago that a number of the fruits and vegetables which Mendel[1] and other laboratory authorities believe are fully assimilated as basal and alkaline products are toxic for me, and, as regularly as I venture to use them, just so surely they produce in me an acid toxemia within an hour or two of their ingestion.

In connection with an actual infection of the blood stream and consequent harmful effects on the heart and vessels, I have been interested for a considerable number of years in the presence of myriads of bacilli of the colon group in the nondecomposed urine of persons experiencing gastro-intestinal disorders. Only recently have I begun watching for and noting the frequent implication of the cardiovascular system in such individuals. Not always in these colon infections was there hypertension and overaction of the heart present. Occasionally there was a systolic blood pressure of 100 or lower, and a diastolic pressure of 55 or 60. I recall two physicians, each weighing nearly 200 pounds, in whom the systolic pressure averaged 100, and the diastolic 75. Rosenow's[2] recently reported cultural experiments may throw some light on these clinical findings. Of his twenty (fourteen acutely) diseased appendixes removed by operation, he found, in six, pure cultures of the colon bacillus in the pus within the lumen, and in predominating excess, though in company with streptococci or other bacteria in the remainder. As the appendix reflects in a considerable measure the conditions of the entire bowel, it seems fair to assume that somewhat similar bacterial findings will prevail in disorders of the main digestive tube. If correct in this assumption, we need not seek far for the explanation of the toxic effects on the heart and vessels in the many forms of food poisoning which seem possible of understanding only on a microorganismal basis. I refer to such phenomena as the toxic and overdriven heart and vascular hypertension, in association with a bronchitis (evidently toxic), and widely separated joint and muscle pains, and skin eruptions other than those typically vasomotor — all temporary, but appearing shortly after a dietary indiscretion, and subsiding only after a thorough cleansing and approximate sterilization of the gastro-intestinal tract.

Still another series of cases will base its cardiovascular symptomatology on the presence of gases in the intestinal canal. Their toxic influence is apparently due to their absorption as such, and to a direct action on the cardiovascular as well as on all the body tissues. I can easily believe, after observing a number of such instances, that the distress in typhoid tympanites is not altogether mechanical, and that it is not entirely due to overdistention and to dislocation of the heart from its normal position. The intestinal gases appear toxic, and I have no doubt the patient absorbs them with the same effect on the blood and cardiovascular system as though he were to inhale illuminating or some other noxious gas. Undoubtedly the mechanical factor is always in evidence, in the form of a transverse position of the heart and an interference with its intake and output of blood. But probably the toxic influence is the more prompt and serious.

It is remarkable how completely incapacitated an individual may be who has ineffectually emptied the rectum and possibly the sigmoid, whereas higher up in the large bowel or in the coils of the small intestine some particle of food is undergoing decomposition, and meanwhile is filling not only the intestine but also the blood and lymph circulations with poisonous gases. These may be retained in the bowel for hours, especially at night, slowly filtering into the blood. Meanwhile the patient suffers all the symptoms of a toxemia and of mechanical discomfort combined. The diastolic pressure is usually elevated, and also the systolic, if the heart muscle is still intact. The vessels pulsate and throb, the skin is pale, the head aches, the tongue is coated, the breath is foul, vertigo is often distressing, and not infrequently the hands and feet feel distended and swollen. Finally a thorough housecleaning of the gastro-intestinal tract causes the expulsion of the offending food substance, and ahead of it an unconscionable quantity of gas, whereupon the blood pressures resume their normal level, the heart returns to an orderly method of procedure, and slowly the nausea, pallor, headache, and the puffiness of the hands and feet subside.

It has been necessary to refer to the various toxic symptoms other than those of the heart and vessels. I have done so briefly, however, as it is my object to direct attention to the primary influence of the food toxemias on the cardiovascular circulation. Wherever the arterial and capillary ramifications penetrate, there will be found indications of a toxin or toxins at work.

1. Mendel, L. B.: Newer Points of View Regarding the Part Played by Different Food Substances in Nutrition, THE JOURNAL A. M. A., Sept. 5, 1914, p. 819.

2. Rosenow, E. C.: The Bacteriology of Appendicitis and Its Production by Intravenous Injection of Streptococci and Colon Bacilli, Jour. Infect. Dis., 1915, xvi, 240.

Dale[3] and later Eustis[4] have attributed the main and usual effects on the blood pressure to certain of the amino-acids, notably the derivatives from leucin and tyrosin. Eustis, by removing the proteins in large measure from the dietary, has in many of his patients caused a distinct lowering of the blood pressure with the disappearance of the general symptoms of toxemia. Other amins have been found working similar cardiovascular mischief, as oxyphenylethylamin in overripe German and American cheeses, by Winterstein and Küng[5] and by Van Slyke and Hart.[6]

I have already mentioned my personal experience with certain nonprotein foods, among them the highly acid vegetables such as tomatoes and rhubarb, and also such fruits as the apple, orange, lemon, peach and strawberry, and the cantaloup as perhaps the worst offender of all in producing an identical picture with that which follows either a protein excess or an overindulgence in any kind of food. Shellfish, unless used in the strictest moderation, will also produce toxic effects.

It would seem, therefore, as though the clinical symptoms suggesting a toxemia, especially as reflected in the cardiovascular system, are to be ascribed in the main to poisons elaborated in the intestine, to be sure, but not from any one group of foodstuffs. The only requisite would seem to be that a given food substance or one of its constituents or end-products shall prove toxic for its individual host. Furnish the summer heat of the bowel, retention for hours, and the decomposition of masses of undigested and often indigestible food, the presence even of food substances innocuous and tissue builders in other individuals, only provided they are toxic for the given one — here we have all the conditions favorable to the production of acute cardiovascular crises, which, if repeated often enough and persistently enough, will result in cardiovascular disease.

I believe most thoroughly, as the outcome of many experiences such as I have described in myself and others, that when we begin to look to the gastro-intestinal tube and its misuse for the origin and cause of hypertension, arteriosclerosis, the myocardial degenerations, and now and again hypotension, just so soon shall we comprehend the fundamental factors inducing the all too prevalent premature old age. Its other name is preventable cardiovascular disease!

1827 Spruce Street.

3. Dale: Jour. Physiol., 1909, xxxviii, No. 4.
4. Eustis: South. Med. Jour., May, 1912, p. 442.
5. Winterstein and Küng: Mitt. Ztschr. f. physiol. Chem., 1909, lix, 138.
6. Van Slyke and Hart: Bull. 231, New York Agric. Exper. Sta., 1903.

Plague.—Recently acquired knowledge has shown that, when intelligently handled, plague is not the menace to man that it was only a few years ago supposed to be. Plague being primarily a disease of rodents and only secondarily a disease of man, it is apparent that, as plague in the past has been recognized to be present only when it attacked man, it has frequently existed in localities without its presence being known. The presence of the disease in rodents is of far more significance than its presence in man, and the history of a disease in a community must be primarily that of its presence in the rodents of the community, plague being present when it exists in rats just as truly as when it exists in man. In fact, a plague-infected rat is a greater menace to the community than is a plague-infected man.—*Public Health Reports*, Aug. 6, 1915.

HOSPITALS AND ESTHETICS*

THE ARCHITECTURAL PROBLEM, WITH PARTICULAR REFERENCE TO ESTHETICS AND THE ART OF ARCHITECTURE

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"In treating the patient, do not forget the man."

I. INTRODUCTORY

What we might call the mortal life of an architectural design ends with its crystallization into the three dimensions of the finished structure. With its resurrection in brick, stone and steel comes the final severance of the created thing from the constructive imagination of its designer. In happy instances it may also mark the beginning of an honored immortality. But in any event the investigation and study of a completed building is from the point of view of the architect really an academic question—a kind of pathologic study—and in the case of a hospital, at any rate, an affair most appropriately conducted by medical experts. And the matter may be left to them in this instance the more fittingly because the details of this building, as the result of conditions peculiar to the medical problem of the Phipps Clinic, are necessarily of limited interest except so far as they illustrate general principles either of institutional organization or architectural design. Therefore I shall confine my attention to a single general phase of this architectural problem—a phase preeminently important in the Phipps Clinic, but also of great, though I believe insufficiently recognized, value in all hospitals; affecting as it does that human side of every hospital problem so well epitomized in the sentence suggested for the entrance of the Virchow hospital in Berlin, and which I have taken for my text: "In treating the patient do not forget the man."

II. THE HOSPITAL AND ESTHETICS

So in the present discussion we shall not further concern ourselves over the dry bones of the matter—the anatomy of the building and its painful growth out of the vast mass of special requirements and conditions that carry the germ of the architectural solution of the problem.

On the other hand, I am vastly interested in the fact that we have managed to turn the iron window guards into little window greenhouses and that we have achieved open fireplaces and window curtains in the wards; and have even smuggled in quite charming brass andirons and fenders. For while these also are quite obviously details, they appeal to me not only because they are pleasant phenomena in themselves—like crocuses and bobolinks in spring—but because likewise they are signs pregnant with meaning. In this instance, moreover, they serve especially well to introduce the real subject of this paper, "Hospitals and Esthetics."

For while those fundamental requisites which we are so light-heartedly passing by form the crux of what we may call the institutional aspect of the architectural problem of the modern hospital, there is that other side which, though more subtle and difficult to define, is to my mind no less essential, albeit demand-

* A paper prepared for the dedicatory services of the Henry Phipps Psychiatric Clinic at Johns Hopkins Hospital.

ing far greater skill to handle satisfactorily. This has to do with the form of the solution rather than the syllogism that determines it. It is more a function of the art than of the science of architecture. And it largely determines the character and quality—the atmosphere—of the resultant building. In other words, it is the solution of the equation in terms of esthetics.

The esthetic phase of the problem of the modern hospital is ordinarily considered as of minor importance and as pertaining to the point of view of the patient only, as differentiated from that of the institution. That this is a distinction without a difference should go without saying; though as a matter of fact there still exists both within and without most hospitals a general impression—or misapprehension—that there are really two points of view—that of the patient and that of the institution—and that the best solution to be hoped for is a compromise between them.

However this may be, the prime requisite from the esthetic point of view is that these institutional demands, and many others not here mentioned, should be met with complete harmony, without architectural disturbance; that all the various functions—clinical, research, teaching—be so comfortably housed under one roof that they may all present their most agreeable aspect to the stranger who enters their household, to the student and teacher no less than to the patient, in one sense the guest of honor.

You see, I am using the simile which lies buried in the word "hospital" itself, and putting the doctor in the position of the kindly and watchful host, not the keen eyed inquisitor—putting back into the definition of hospital the full meaning of "hospitality," somewhat forgotten perhaps in the stress of scientific progress.

Architecturally, this means an interior which shall be cheerful but not exciting; varied but without disturbing contrast; roomy but without the large scale that stamps it an institution. In a word, a building expressing that familiar quality of the individual home to a degree sufficient not only to rob the institution of its tendency to arouse the feeling of strangeness but also to produce if possible a more soothing and agreeable reaction in the patient than in his ordinary lot in life.

III. THE INSTITUTION AND THE PATIENT

And first, with particular reference to this question of esthetics, I want to speak of those so-called two points of view, that of the institution and that of the patient, and their apparent divergence when the hospital problem is looked at in certain lights. For no one else, I think, of all those concerned in the matter of hospital design—trustees, doctors, superintendents, nurses, students or patients—has such a comprehensive and unbiased view of all its aspects as the architect. And withal, because of his own sins I think he can peculiarly well understand the true inwardness of the situation.

For the architect perhaps of all professionals is most tempted in his work, to mistake the means for the end. While the real value of architectural drawings lies mainly in their effect on the building to be produced, they are often mistakenly thought to represent the entire problem; being at the start its only tangible manifestation and the medium through which the designer must work out his solution. And so in studying the plans he sometimes forgets the building.

Thus in a somewhat similar way it is easy for the doctor—and in accord with the popular habit I let him stand here for the institution—to forget the man in treating his ailment. It is perhaps natural for him to regard the situation somewhat as if he had the disease in the hospital while the patient remained comfortably at home, instead of having them wrapped up together in the same bed jacket. And the illusion is made almost perfect when that garment is made of jaundiced gray flannel, presenting to the eye a sight exactly analogous to the smell of ether and iodoform—a garment, in short, just such as you would expect a disease to wear, and a correspondingly complete disguise for a human with red blood in his veins and a heart with cockles crying to be warmed.

But to the layman the patient appears as a combination of a man and a disease, presumably brought to the hospital to be separated one from the other. The rather obvious point I wish to emphasize once more is that they do enter the hospital together, however they depart.

Quite naturally the doctor and surgeon may be inclined to speak of "cases," and catalogue the man under the name of his ailment. It is natural and convenient, the necessary practical custom, just as we architects deal with our problem in terms of draughtsmanship and habitually think of them, I regret to say, as plans and elevation, in terms of two dimensions instead of three, and thereby make some of our most grievous blunders. Hence it is that an architect can speak with a certain professional sympathy on the text of this paper, "In treating the patient, do not forget the man."

IV. THE "HOSPITAL ATMOSPHERE"

I think it safe to say that no one expects to experience a sense of pleasure on entering the ward of a hospital. It would be unreasonable to expect the fundamental fact of sickness and suffering to be obliterated by a cheerful environment; but that the emphasis can and should be put on the hope of recovery and the joy of life seems axiomatic. And the point I wish to make, again, is that in seeking to accomplish this end we should make use of the physical environment no less than any other therapeutic agent. Make the hospital ward a tonic in itself, adding an esthetic section to materia medica.

After many weeks spent in visiting institutions throughout Europe, the impression made by the ward of a recently completed hospital in London still stands out vividly in my memory. The room was rather low ceiled, and made no architectural pretense. But the sunlight came through prettily dressed windows and fell on stands of flowering plants, while the reflection of a brisk open fire danced on a dark polished floor. And lying in brass-knobbed beds, crisp and fresh against warmly tinted walls, the patients themselves provided a finishing touch of cheerfulness by wearing bed jackets of hunting pink. It was positively festive. In the midst of smoky London, and in the heart of a great institution, it gave one a shock of pleasant surprise. My first impression was that we had made a mistake; and the next, that if we were really by chance in a public hospital ward I should be more content to be ill under such conditions than well in most other rooms in London. Of course I knew better than that; but such was the mental reaction, distinct and immediate, and in radical contrast, to experiences in a hundred other wards.

For any one, I think, who has seriously studied hospitals must acknowledge that in most cases the doctor, with the help of the trained nurse and an equally efficient mechanical plant, makes his cures in spite of rather than with the aid of the atmosphere immediately surrounding the patient in the ward. To realize this you have only to ask yourself how the ordinary hospital ward would affect its inmates if they were placed there without the doctor, without the trained nurse, and without all the other special aids to efficient treatment and bodily comfort.

While a hospital is obviously and essentially a place to get out of, it should equally be a place into which the sick man is eager to go; and the presence of one and the same quality in the building would aid materially, I hold, in producing both these desirable characteristics. And it is of this "quality" and the relation it bears to all hospitals, and their design, that I shall now particularly speak.

The first and very obvious fact is that while there must always be "institutions" as well as "a public" to serve, there can be no longer two different points of view. The interests of the two always are and have been, of course, identical. The trouble has been rather with the eyesight—a matter of astigmatism, or more accurately speaking, "double vision"—fortunately of the kind that decreases with the years, as its causes are eliminated. But its genesis in the case of the patient is historical and dates back to the days of Bedlam and the Hotel Dieu—the days of chains, straight jackets and pens, and of four, or even six, in a bed. And all this, let us remember, only a few generations since. Let us acknowledge, then, at the start, that the hospital has a gruesome reputation to live down, however undeserved it be today. That the inheritance was partly bred of ignorance and superstition is immaterial. As a matter of fact, to a certain extent the masses still have a tendency to mistrust and fear.

After all, taking a man out of his home, however poor it may be, is transplanting him, and means that he must find himself again in the new environment. The sheets of the hospital bed are cleaner, even finer, perhaps, than his own; but he has got to warm them up, nevertheless, before he can relax between them.

The poorer he is, the more startling the contrast between the impersonal institution, high ceilinged, vast, mechanical and unresponsive, and the tiny room he has left, stuffy, dirty and ugly, if you please, but thoroughly vitalized through personal use. To leave it for the average hospital ward is like changing from a comfortable dressing-gown to a ready-made suit of oilcloth several sizes too large. The less educated, the less intelligent he is, the more he depends on sensuous feelings for contentment. Sensuous ideas, the first to emerge from the mind, are the first to arouse delight, and constitute primitive happiness and content.

After the patient is warmed and fed, the sense of color may quite conceivably make the strongest appeal for gratification. And what is there in the conventional hospital to gratify it?

The answer is "complete asepticism"—glistening tile, white marble and glass, nickel and enamel paint, iron furniture, windows without curtains, mechanical ventilation, invisible convected heat to the exclusion of the radiant open fire, or even the reddening stove. And on all sides our friend the gray flannel bed jacket! Perfect asepticism, with not a germ in sight, in many cases not even the germ of comfort!

Such conditions are, I think, already changing; but a ward designed with any real esthetic consideration is still rare.[1] And such consideration, when it happens at all, is largely superficial. Given the size, shape and general character of the room as determined on the lines of the most efficient service of the doctor, nurse and orderly, the architect is indeed permitted to make the best of the conditions. But his treatment of the problem must not involve additional expense, either in first cost or upkeep. So that any stray element of beauty that may find lodgment in the crackless walls of efficiency and asepticism is oftenest a hazard of fortune, a by-product at best of the architect's design.

It is a fair question whether there is not a larger efficiency to be considered, and whether the price of perfect asepticism is not too high. For in spite of all its modern improvements, when you send even the intelligent patient to the hospital you have put him in the incipient stages of mental gooseflesh, whereas the prime requisite of the hospital, after all is said and done, is that it should inspire confidence and hope. And surely this requisite, this quality in the institution so closely analogous to personal magnetism in the physician—what I might call its own "personal appeal" to the public—should be the wider and more compelling just in proportion as its scientific efficiency increases.

Is there no way in which this result can be more generally assured?

Personally—speaking always as a lay observer—I believe that it can be done; not only without material expense, but also with ultimate economy in the operation of the hospital. This is, I admit, a difficult thing to prove. Our argument must necessarily be based on *a priori* reasoning, on common sense and a study of the effects of environment on the normal man, both cultured and uncultured, all of which is beyond the scope of this writing, as well as the writer's knowledge. But there is already sufficient testimony from high medical sources to establish the serious importance of the matter. Sufficiently so, I think, to reduce the debate to a question of degree—the general principle being admitted—the degree to which consideration of a patient's mental mood, as it reflects the reaction of his senses to environment, can profitably be carried.

For in the last analysis the problem is of course an economic one. And if it were only possible to make tests of one and the same patient under conditions identical, except as to that of his immediate environment, it would be a simple sum in arithmetic to answer the question beyond peradventure.

V. EFFICIENCY AND FIXED CHARGES

Unfortunately, all we can do at present is to show how small need be the benefit to the patient in order to justify a considerable expendituure in making his environment as stimulating as possible to his recuperative instincts. To this end let us capitalize a small fraction of the time during which the sick man uses the hospital, considered as a huge machine, and see what the saving of it would mean financially. Let us look at the matter for a moment from a purely commercial point of view.

The real efficiency of a hospital, I take it, is measured by the rapidity with which it discharges its

1. A noteworthy exception is found in two units of the Indianapolis City Hospital (Bare Walls and Monotony, Current Comment, THE JOURNAL A. M. A., Dec. 5, 1914, p. 2049).

patients with relation to the cost involved therein, and the degree of permanency of their betterment. In other words, the efficiency of the hospital, like that of the industrial plant, is measured in terms of its "production costs" and the quantity and quality of its products. But where the industrial corporation considers the interest on its invested capital as one of the fundamental items in its accounting, the hospital, having no stockholders, naturally assumes that its efficiency is practically determined by its current operating cost, quite regardless of invested capital, sinking funds to cover depreciation and obsolescence of plant, and the various other items which go to make up the fixed charges of a commercial corporation.

Taxes on hospital property are remitted, of course; and while from one point of view it is permissible for the hospital to disregard likewise the matter of interest on funds donated for its perpetual use, it might be better if such institutions were to look on their endowments in the light of invested capital whose stockholders expected an interest return on their stock.

Let us consider then, for a moment, this vital element in its economic relation to operating expenses and see how such a point of view would affect our statement of "cost per patient," particularly as an index of real efficiency. For the figures ordinarily given in hospital reports as the cost per day per patient do not in themselves by any means record the efficiency of the institution. Such figures mean little except when taken in relation to the average time during which a bed is occupied in each case—the quickness with which the hospital performs its function and discharges its patient.

Presumably the better equipped institution—that with the most approved layout and apparatus—will turn out its patients at a smaller cost per day or in a shorter time, or both. The important question, then, is whether such savings are sufficient to justify the additional cost required to effect them. So the real efficiency of the hospital—its power to make profits for the community—can be determined only when in addition to its operating costs we take into consideration the cost of the plant, and the consequent fixed charges under which it must operate, exactly as in the case of a commercial enterprise.

Let us see in the case of the Johns Hopkins Hospital, for example, what the real cost would be per patient per day if the matter were looked at from a purely business point of view and proper allowance made for the use of the plant, and what even a small saving in time would mean in consequence.

The cost of the buildings and the apportioned share of the general land and plant investment used for the indoor service of the hospital totals approximately $3,600,000. Assuming an interest charge of 5 per cent. on this amount, without any sinking fund for replacement, the annual fixed charge would be $180,000.[2] This sum apportioned among 358 beds, which may be assumed as the average capacity of the hospital, would make a fixed charge of $500 per year to be carried by each bed, or $1.37 per day.

This item, which, as we shall see, increases the cost per patient per day by 45 per cent., is nowhere to be found in the Annual Report of the institution. This is but following the general custom of our hospitals; yet in cases where the amount charged as "running cost" is lower than at Johns Hopkins this silent factor is relatively even more important. The inclusion of proper fixed charges in many instances would increase the so-called cost per patient by as much as 60 or 70 per cent.

Now, the average time of occupancy for each patient is approximately three weeks; and if we were to assume that this could be shortened 5 per cent., it would mean a saving of a full day's interest, or $1.37 for each occupant; and for the average of seventeen patients per year, an annual saving of $23.29 per bed. This capitalized at 5 per cent. represents either an investment or a saving in endowment of $465 per bed; or for each ward of twenty beds, $9,316.

This, however, is only the saving in fixed charges. The same shortening of the period of occupancy would mean a saving also in the actual running expenses (stated in last year's annual report to average $3.03 per bed per day) of $51.51 for each bed; which again capitalized would represent $1,020 per bed, or $20,404 per ward of twenty beds.

Thus, when we take into account fixed charges in addition to operating expenses, the shortening of the average time of occupancy by a single day would represent a saving equivalent to the interest on an additional investment in plant of $1,486 per bed, or $29,720 for a ward containing twenty beds; or for the Johns Hopkins Hospital as a whole, containing 358 beds, the comfortable sum of somewhat over $500,000.

This calculation, it is to be noted—dealing only with the clinical service—takes no account of the collateral savings or advantages accruing to the other departments of the institution. Nor is any attempt made to estimate the financial value to the community at large of the time saved for its wage earners by a quicker return to work.

While a fraction of this $500,000 properly spent would make a vast difference in the atmosphere of a hospital, even one of the size of Johns Hopkins, the question still remains as to whether or not such a metamorphosis would effect the shortening of the average confinement by as much as twenty-four hours in three weeks. And though the amount figured above seems to provide a wide margin to work with, nevertheless for the moment I shall frankly beg the question. Nor will I here attempt any suggestions as to the spending of these capitalized savings, contenting myself with suggesting a line of thought—a point of view that may be worth investigation. From a purely commercial point of view, however, it would look on the face of it as if any increase of investment cost per bed less than $1,486 which would shorten its average occupancy by one day out of twenty would be obviously a good business proposition.

So for the present the sum of "somewhat over" $500,000 may remain in trust until I have time to prepare a second paper, after consultation with the doctors and psychologists, patients and nurses, dedicated to the purpose of spending it. Meantime, I might as well confess, I am keeping the trimmings, the "somewhat over"—the sum of $31,988, to be explicitly frank—with which to provide at once open fireplaces, window curtains and pink bed jackets for the entire hospital.

VI. THE INSTITUTIONAL ATTITUDE

I am afraid, however, that my good intention in these respects, even though gratuitous, will be met with objections from the authorities. Open fires make dirt and chimney flues harbor germs, enticed, one must

2. The figures on which these calculations are based were furnished by the comptroller through the courtesy of Johns Hopkins Hospital.

assume, from their present spacious suburban dwellings in the ventilating ducts. The hunting pink bed jackets show spots, and the window curtains are nothing short of an insult to the aseptic school of thought, and would cost a lot to wash, besides; to which I cannot refrain from replying, that both bed jackets and curtains being hypothetic, there is scarcely any chance of their ever getting dirty, and hypothetic washing would cost nothing if they did. And besides, if the dust is there why not catch it with the curtains anyhow?

But this whole matter of asepticism I am going to leave to the doctors, including the question of glistening tile and paint. For I suspect a certain amount of sympathy in their attitude in this matter. I have been secretly advised that because certain conditions in hospitals are general they are not necessarily right; that possibly the aseptic pendulum has swung too far; that cold white walls, even in the operating room, may be a mistake from an entirely practical point of view.[3] And as I reflect with what shocking clearness the dust shows on our black piano lid, I wonder whether these doctor friends are not right and take courage afresh in consequence.

As to the source of such objections as just cited, merely as typifying the ordinary point of view held by most hospital authorities, I cast no aspersions; although in passing I am tempted to take a deprecatory whack at the hospital superintendent. Not that there is any personal feeling about it—merely a matter of racial antipathy. For the superintendent is a fellow whose existence depends on lavish economy in other people's affairs, while the architect lives, of course, on wise and economic expenditure—expenditure anyway—oftentimes by these same "other people."

So even against these minor reforms, the efficient hospital superintendent will probably protest. From his point of view all these homelike things complicate; even walls of good texture and pleasing variety of color throughout large buildings mean trouble and expense in redecorating. And after all, he says, while you and I appreciate such things, the average patient would never know the difference. And herein he has usually been backed up by his board of trustees.

This is their manner of saying that the sense of beauty is a cultivated, not a natural sense; or if natural, then at any rate a negligible one. Whether this does not put the cart before the horse, the sense of beauty being the vital moving cause of all culture, is not to be discussed here; nor is it perhaps worth discussing at any time. But we are very presently concerned with the practical consequences of a theory which teaches that while the senses of heat and cold, of smell and hearing and touch, are to be reckoned with and respected—like all other bodily functions—the sense of sight needs no consideration; that the eye can protect itself.

I do not especially blame any of these gentlemen. It is more in sorrow than in anger that I point out the fact that if any of them were to scent an unpleasant odor in the ward (ether and iodoform are here classed by courtesy as "pleasant") they would be shocked; and still more so if they were greeted with distracting noises at every turn throughout the hospital and were told that both the smells and the noises were part of the hospital environment to which patients soon got accustomed—had to, in fact, unless they held their noses and kept their fingers in their ears. And what would they say if told that sick people of the class that come to hospitals do not notice smells and noises anyway?

Yet when I claim an analogy between discordant esthetic conditions, in color, line and form, and the corresponding reactions of the senses of smell and hearing when irritated by what we call smells and noises, they will dismiss it quite likely as an academic question. Furthermore, it will doubtless be claimed that even if this be true, we are all used to "visual noise and smells," particularly in the case of those liable to become ordinary hospital patients. And this, one must acknowledge, is more or less true. For while society recognizes noises and bad smells as evils against which the individual should be protected, and includes the boiler and the glue factory, the brass band, and even the church chimes, in the nuisance clause, discordant, hideous forms and colors are not mentioned. While, in short, the sense of smell and sense of hearing are protected, the sense of sight is left to protect itself, or grow callous. I admit, then, that the hospital patient is accustomed to more or less ugly and disturbing surroundings.

On the other hand, we do not argue that because the sick beggar on the street has not known what it is to be really warm for months he can just as well be left cold when he is taken into the ward. As a matter of fact, he is apt to get a special dose of hot things. And that even this same beggar would not react—subconsciously if not consciously—to a radical change of visual environment—that he could not feel the difference even though he could not consciously appreciate it—I am prepared to question.

My point here is fairly well supported, I think, by the example of the negro and the primitive savage. Even the simple minded country bull has an opinion in this matter of color. And his opinion is at least entitled to respectful consideration. At any rate it has always received it.

Of course I am not speaking of those niceties of value, color and form that one ordinarily correlates with the words "esthetic" or "artistic"; nor of architectural scale and design where the case is less obvious than in the matter of color. The appreciation of form is higher up in the scale of sense perception. But because we have not as yet recognized its presence except in the so-called cultured human being is no proof that it does not exist, even in the average hospital patient.

Again, the attempt to capitalize the glow of the open fire and the brass knobs on the beds may be challenged as far-fetched. But think for one moment what the world pays to satisfy the esthetic instinct of mankind. Are the billions spent annually for such purposes merely colossal extravagances—simply unrelated madness exhibited by nine tenths of the human race? When commercial greed plays on such sense instincts in a thousand ways, for the single reason that the satisfaction of their hunger pays rich dividends, can you say that such "feelings" are negligible, have lost their power to respond when we need them for higher purposes, as an aid in the alleviation of suffering, a stimulus to life and happiness? For centuries Mother Church has known and used them to the utmost—music, incense, stained glass windows, wondrous architecture—as a mighty aid in her work of exalta-

3. For example, the walls of Carrel's operating room in the Rockefeller Institute are painted very dark gray, almost as black as the sheets, gowns and masks used to cover the patients, assistants and the surgeon himself.

tion. Why then should Medicine admit them to the hospital only on sufferance?

VII. CONCLUSION

The generic function of architecture is, of course, the proper housing of the human race, in sickness as well as health, and I venture to say that there is today no greater field of prophylaxis against disease. It is fast becoming so recognized in all civilized countries. The point I make is, that if the art and science, the esthetics and mechanics, of architecture are useful in the prevention of disease, so also may they be of service in its cure, and that this involves more the art than the science of architecture. For the profession may properly be thus defined, theoretically, as of two departments, after the fashion of medicine and surgery. No less, unfortunately, is it largely practiced as one to the exclusion of the other, nowhere more regrettably than in the case of the hospital, where too often the science has entered to the exclusion of the art. So it has happened that among all the new hospital conditions that have combined to make the radical advances since the days of Bedlam and the old "Hotel Dieu," one looks usually in vain for the esthetic element—a consideration of the sense of beauty. With rare exceptions, the only real esthetic touch in our great hospitals is an accidental one—the trained nurse in her cap and gown. And I venture to say that, considered merely as a piece of decoration, she has done more than any other one thing to counteract the blight of the institutional atmosphere.

The Æsculapian temples of healing were shrines of beauty. Should we then consider the modern hospital as nothing more than a huge shelter provided for the surgeon's, doctor's and nurse's work, as an aseptic workshop furnished with power and machinery, the latest tools and the most perfect equipment and scientific aids to research and clinical efficiency, merely a complex of conveniences and apparatus? Or can we consider it not merely a great mechanism, but a silent agent in the art of healing?

Is this utopian? Is there healing virtue in sunny climates, in the scent of pine woods, in the stimulating sight of lofty mountain peaks? And is the value of such things found only in direct physical results? Is environment powerful only in aspects of nature? Does our sense of sight react less powerfully to walls of cheerless glaring plaster than of sunlit foliage? Must the patient make the effort to shut out the one while he welcomes the other? And is an invalid less sensible to such things than the well man? Is the sense of beauty measured altogether by a man's strength and vitality any more than by the degree of his so-called culture?

Am I wrong in thinking that, after all, the most perfect hospital is the one which most nearly satisfies the requirements of that master of all consultants, Dame Nature, and that diagnosis, operation, treatment, research, are all but a seeking to find the way of least resistance through which Nature shall work? And if this is so can we afford to neglect the least helpful thing even though we believe others more important? Can we yet say through which door of the bodily senses this healing spirit is most apt to come and go? Above all, should we neglect the sense of sight? Or is it mere poetic license that calls the eye "the window of the soul," thus rating vision, psychically, as our master sense? Is it right that the sense of beauty should receive full communion in God's cathedral of Nôtre Dame and a block away be cast out like some dreaded heretic from the Hotel Dieu?

That a profession whose great minds hail medicine and surgery as inseparable would wittingly call in the architect to serve as master builder but exclude him as the artist, I am indeed loath to believe.

"Λαμπάδια ἔχοντες διαδώσουσιν ἀλλήλοις"—"Having torches they passed them on, one to the other." And should it not be today—and always—as it was in the days of the torch race? In his address in surgery on the "Realignments in Greater Medicine," Cushing pleads for the wider cooperation of medicine and surgery and their allied sciences; which, as he quotes from Huxley, "are independent in proportion as they are imperfect." And so he speaks hopefully of the closer copartnership into which the men of medicine, surgery and scientific research are now entering. But must we stop there? Is it presumptuous to suggest that in this business of healing the sick in hospitals, the art of architecture be included as a kind of special partner? Are there not times when in the brotherhood of all the arts and sciences one profession should take the torch from another, as did those Greek runners, proud to be its bearer if only for a moment, eager to advance it toward the goal; content if only it be none the dimmer for his carrying, and ready to yield it in turn to some fresh runner in the race of human progress?

So, while as an architect speaking of things medical I have some fear lest parts of this paper appear to be rather superficial criticism of things beyond the scope of my profession, from a broader point of view I make no apologies. For to my thinking the universality of art, both in extent and intent, enfranchises the craftsman in every domain of human activity in which he renders service—gives each profession a brevet in the ranks of every other. So I feel that in a large sense, even as it is, I speak among confrères.

In such a spirit at all events, encouraged, be it said, by some of those who are today the acknowledged torch bearers of greater medicine, I have thus ventured into its kingdom, asking "safe conduct" for the sake of the Art whose passports I carry.

20 West Forty-Third Street.

THE CASUALTIES OF MODERN NAVAL WARFARE *

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A consideration of the casualties and surgery of modern naval warfare were best approached by a brief review of ancient and modern naval battles, the implements used for the destruction of the enemy, and the character of the casualties inflicted. The means used for caring for the wounded would be almost a recital of the history of medicine and surgery.

The Bible, though replete with land warfare, beginning with the first battle described in Genesis xiv, 14-15, wherein Abraham had under his command a body of men for distinctly military purposes, fails to recount a single naval engagement, for the reason that the only two fleets enumerated (and also described in profane history) were designed for commercial instead of war purposes. Solomon controlled the Red Sea by reason of David's conquests, and only by consent

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of Solomon could the Tyrians pass through this sea. They had gained the mastery, but not the supremacy, of the sea. King Hiram of Tyre built and manned a fleet for Solomon, who sent it to Ophir for gold, from which port it safely returned. The Tyrians also built a fleet for Jehosaphat for the purpose of bringing gold from Ophir, but the ships were large and unwieldy and were broken up on the shore of Tarshish, a port of the Red Sea. Though possessed of military skill and with a knowledge of strategic maneuvering, they did not take kindly to the sea. They intuitively divined that which Hawkins derived from experience — that "The sea is naturall for fishes and the land for man." When the sons of Jacob came to sojourn in the land of the Pharaohs, the Egyptians were already expert in warfare and had a considerable army. A bas-relief from Thebes (period 1400 B. C.) depicts a naval engagement wherein the Egyptians vanquished the Indians. Herodotus describes Egyptian war galleys 126 feet long and 16 feet beam and writes that they were manned by the rowers and soldiers. These vessels had a raised poop, on which the archers were mounted, and had a metallic ram bow. They were built of strong acacia planks; ribs and knees and the masts were of fir. Xenophon give an excellent description of the Greek war galleys.

The stage of the simple missile weapon had no doubt passed before the first sea fight, but we find the dart, the javelin, and the spear of the missile type, and for weapons at close quarters, the cleaving axe, the crushing club, the thrusting sword or dagger, and the ram bow; and last, the discharging missile type, comprising the bows of the archers and the catapult. These were used in the earliest naval engagements and the wounds inflicted can readily be conjectured.

Greek legend relates that Minos, the Phenician ruler of Crete, sent out ships to free the Grecian sea of pirates; this was two generations prior to the siege of Troy and the Argonautic expedition. The sea coast had been devastated and nothing remained but a pirate village or the abode of a fisherman. Thucydides states that the oldest sea fight was that of the Corinthians against the Corcyreans. Their small and deckless craft were the origin of the valorous Grecian navy, which with a much inferior force vanquished the great Persian fleet of Xerxes, numbering 1,207 vessels of war, exclusive of the transports, having a complement of 241,000 men, in 480 B. C., between the island of Salamis and Attica, the first decisive naval battle of the world's history. In Herodotus' account of the battle he describes the Persians as healing the wounds of the brave Grecian, Pytheas, with myrrh and binding them with flaxen cloth.

At the battle of Actium, 450 years later, Antony's fleet of 200 heavy vessels armed with the heavy artillery of that period, was set on fire by four fire-ships and destroyed. The great loss was from drowning and burning.

Rome maintained an imperial navy as a part of her military establishment. A tablet was found on the Elysian fields, in the vicinity of the Pontus Julius and the station of the imperial fleet, erected to the memory of M. Sartorius Longinus, physician to the *Cupid*, a three-banked ship. When it is considered that the complement of men in the ships of this period was about 480 it is probable that medical men accompanied navies as well as armies.

Passing to the sanguinary battle of Lepanto in 1571, wherein the states of the Mediterranean united against the Turks, and 273 Turkish vessels engaged 208 heavier Christian vessels, the Turk force of 20,000 men was almost all sunk or driven ashore. In the engagement the Christians were armed with cannon and small arms, but the Turks relied principally on bows and arrows. "The arquebusier, the musketeer, and the bombadier of the Christian force looked carefully to the state of their weapons and equipment and the surgeons prepared their instruments and bandages, and spread tables in dark and shaded works for the use of the wounded." In the conflict 20,000 Turks were killed, largely by fire arms, and 8,000 Christians perished by the arms and cuirasses of the Turks. On Cordona's galley "the masts and spars were stuck full of arrows" and 450 out of the 500 Sicilian soldiers were killed. Cordona received a wound in the throat, of which he died. Lepanto, which spoke the doom of Turkish naval power, was the last European battle in which a commander used the crossbow.

Seventeen years later came the defeat of the Spanish Armada — 32,000 Spanish on 132 vessels, and 17,000 English on 197 vessels, generally smaller (although the *Triumph* was 1,100 tons). The fire-ships played an important part for the English in this conflict "with almost equal effect to that of the fire-ships which the Greeks so often employed against the Turkish fleets in their war of independence."

In Nelson's great victories, the Nile and Trafalgar, the French casualties were appalling, especially during the Nile engagement, wherein the *Orient* caught fire and exploded. In this battle, of the 11,000 persons in the French fleet, but 6,000 returned to France.

Passing to our own naval battles, in the first American victory in the engagement between the *Bon Homme Richard* and the *Serapis* we find a high casualty rate. Jones gave the wounded on board the *Serapis* as more than a hundred, and the killed probably as numerous. Of the wounded, thirty-three were said to have been "miserably scorched," doubtless by the explosion of the cartridges on the main deck. This means a casualty list of nearly 70 per cent. The *Richard* had forty-two killed and forty wounded, a total of 25 per cent. "Two of the three eighteen pounders in the *Richard's* gun room burst at the first fire, spreading around an awful scene of carnage," writes Slidell. "The three American guns which remained in commission were double shotted and loaded with grape and canister to clear the enemy's deck. From the *Richard's* tops and yard arms, hand grenades were dropped setting the *Serapis* afire many times. One of these set fire to a number of cartridges, which exploded and killed twenty men at the guns and stripped the remainder of their clothes, burning them frightfully."

The American sailors during the Revolution were better marksmen than the English. Trained in the backwoods to take aim before firing, they practiced these tactics with their batteries, while the English fired point blank. They also used carefully aimed, slow moving, heavy balls, which splintered the wooden sides of their opponents, annihilating whole gun crews with the resultant shower of splinters. "This is how the *Wasp* demolished the *Frolic* in forty-three minutes, and the *Hornet* demolished the *Peacock* in just eleven." At the battle of Lake Erie, as the result of the concentration of the British fire on the *Lawrence*, out of a crew of 101 there were eighty-three casualties. The guns used in the engagement ranged from four to twenty-four pounders.

During the Civil War, one half of the *Cumberland's* crew perished when the iron prow of the *Merrimac* rammed her. At the same time a raking fire of shells was poured into the Union frigate's side. "The battle of the afternoon had ended the day of wooden navies." In the battle of Santiago 353 of the Spanish were killed or drowned and 151 wounded. At Manila Bay the Spanish casualties were 167 killed and 214 wounded. At the battle of the Sea of Japan 4,000 Russians perished and but 116 Japanese were killed and 538 wounded.

From Sanoyeshi and Suzuki, of the Japanese navy, we have detailed accounts of the casualties of the naval war between Japan and China, and from Suzuki, Totsuka, and Braisted, those of the Russo-Japanese war; and from Medical Director C. F. Stokes, former Surgeon-General of the United States Navy and Surgeon Don Juan Redondo of the Spanish navy we had the same of the Spanish-American war. These different reports agree generally as to the gross lesions, and from them the following summary is drawn.

The hollow steel shell, with its conical point and its interior mechanism, which causes detonation on impact, ignites the large bursting charge, causing a comminution of the steel, producing a conical shaped shower from the point of disintegration, in consequence of its mass momentum. Added to this is every object struck by the fragments, which becomes a secondary missile. These may be wooden or metal objects—a splintered door or a bursting steam pipe. Shell fragments are irregular in size and form, with roughened and sharp edges. They retain so much heat that the tissues in which they lodge are seared. Their velocity is relatively low.

Wounds occasioned by shell fragments, or by the secondary missiles caused by shell explosions, will naturally vary according to the size, form, momentum and gyration; the difference in the tissue affected is even greater. Laceration is the common characteristic of all lesions, whether the tissue be soft or bony. Great extent, multiplicity, and the frequency with which missile fragments and portions of clothing are carried into the wound are other happenings. The wounds of entrance are generally smaller than those of exit, but the reverse condition sometimes happens. As Suzuki remarks, "This phenomenon and others are hard to explain." He found cavities of blind wounds with comparatively small inlets containing fragments of shell several times larger than the wound itself, wounds of only one orifice, in which no fragments of shell or splinters could be found lodging, even with the Roentgen ray, and at postmortems others were found, the presence of which could not be accounted for.

Multiplicity of wounds is usual; there may be more than a hundred wounds from one shell in a single individual. The different wounds on the individual will vary widely in character. The majority of the wounds are blind, and as compared with bullet wounds, perforations are relatively few, this being the result of the decreased velocity. Troublesome hemorrhage is rarely produced, even though the wounds be large and in several parts of the body, although there is great injury from extensive wounds. In mutilated wounds of the limbs the blood vessels were frequently cut through, with but few cases of hemorrhage, owing to the retraction of the severed ends. Fragments often pass close to the blood vessels without injuring them. Comminution of a bone generally results when small fragments strike it; yet at times the bone is merely fissured or chipped off. Traumatic aneurysms are common. The shell fragments may be lodged at any depth and involve every structure of the body. The bursting steam pipe or exploding boiler, perhaps complicated by displaced ashes, will cause every variety of burn. Concussion of the brain and rupture of the membrana tympani are frequent occurrences.

With reference to the infection of wounds from shell fragments the majority of observers report that infection is general. Redondo states that wounds in naval battles, in the great majority of cases, are not, and cannot be, aseptic wounds in which we hope for quick healing under the simple first-aid dressing applied on the instant, and Stokes concluded, "It is not surprising that they are so commonly infected when we consider the extent of contused and lacerated surfaces exposed to contaminating influences." Both these observers wrote from conditions observed during the Spanish-American war in 1898. Suzuki is more optimistic; he writes: "Shell fragments are generally antiseptic. Wounds of small shell fragments generally heal by primary union. When suppuration occurs examination should be made for the presence of foreign bodies, which once removed, wounds heal quickly." These conclusions are from observations during the Russo-Japanese war of 1904-1905. Suzuki, however, remarks: "Even in peace complete asepsis is a difficult matter of attainment on board ship. During an engagement it is ten times more difficult. During the firing of guns, the hastening to and fro, and a thousand other things that fill the air around the temporary surgery with dust and particles of matter, a number of wounded cases are brought in, each demanding immediate attention, and asepsis is impossible." Two other valuable remarks of this careful observer are that covering the wounded surface with skin is a good protection to it, and in cases of compound fractures, free segments of bone in the cavities should be extracted, but if not completely detached, they should be permitted to remain in the cavity.

The comparative frequency of wounds with reference to the parts of the body involved vary with different observers. During the Russo-Japanese war, of 2,164 wounds reported by Suzuki the following percentages are recorded:

Lacerated wounds	32
Contusions	21
Abrasions	10
Blind wounds	10
Burns and scalds	6
Multiple wounds	6
Concussion of labyrinth, rupture and congestion of tympanic membrane	5
Perforated wounds	5
Pulverized wounds	2
Wounds with loss of soft tissue	2
Incised and punctured wounds	1

The difference between wounds inflicted during naval battles and those on shore is due to the fact that about 90 per cent. of those on board ship are the result of shell fragments, and of those of land warfare 90 per cent. are inflicted by bullets of small caliber, high velocity and penetrative force. An examination of the available reports of the present war from British naval hospitals, and from the naval action off Heligoland, in the North Sea, and at Zanzibar shows

no change in the relative per cent. of casualties from shell fragments from that in previous naval wars.

In wounds from small caliber bullets, at times both the wound of entrance and exit are located with difficulty. The present war has not altered the status. Osler remarks, as a result of his observations of wounds of this character in the present war: "They illustrate the inefficiency of the modern rifle as a weapon of war." Of nine wounds of the chest, seven were complete perforatıcns with bullets, one shrapnel bullet lodged in the lung, and one fragment of a shell had also penetrated the lung. "These men had been wounded within a fortnight, yet all were up and about, without fever, practically without cough or other symptoms, and with very few physical signs." The wound of entrance in all was small and healed, the wound of exit a little larger and healed. "The death rate in the Spanish-American war was 27 per cent., while in the Japanese war in 927 cases, it was only 3.67 per cent." The mortality in the present war may be still lower. The observations of Alexis Carrel are to the same end. The Berlin observations are also corroborative.

Medical Inspector Gravatt of the United States Navy reported that during the battle of Santiago, when a competent first dressing was applied, wounds did remarkably well, notwithstanding unfavorable surroundings. He also stated: "One of the most practical lessons taught by the war, ashore and afloat, and about which all observers are agreed, is the importance of a competent first-aid dressing in preventing wound infection."

Surgeon C. M. Oman, United States Navy, recently wrote: "It can be prophesied with assurance that most wounds of naval warfare will suppurate, but with liberal use of iodin this ought to be less marked than in former battles." In view of the great efficiency of iodin in emergency surgery in civil life all agreed in this optimism, and it is as discouraging as it is astonishing to note the following from the "Preliminary Report of a Committee Appointed by the Director General of the Medical Department of the (British) Navy, in December, 1914, to Inquire into the Best Method of Treating Wounds Sustained During an Action, Especially During the Early Period After Their Infliction." The report was published April 1, 1915, and its committee membership is Sir Watson Cheyne, Fleet Surgeon, P. W. Bassett Smith, and Mr. Arthur Edwards, F.R.C.S.—all eminent names in the British medical and surgical world.

The report contains this sentence: "*Many of the wounds which have been treated with iodin are amongst the most septic which we meet with.* It is quite clear from all these facts that iodin is useless for the disinfection of wounds in war, or for inhibiting the growth of bacteria in wounds." The provisional recommendation of this committee is: It is proposed to recommend this combination (salicylic acid and boric acid in equal parts) to the navy in the form of pepper pots (pepper shakers) containing about 1 ounce each, and of paint tubes (collapsible tubes) containing ½ ounce of 20 per cent. cresol paste (in lanolin and wax base) the tubes being provided with a nozzle about 2 inches in length, which are screwed on the ends of the paint tubes, so that they can be introduced into the depths of the wounds in various directions. This tube should be used on only one patient and then thrown away. In the ships a sufficient quantity would be issued to deal with the probable number of wounded; in the case of a naval contingent acting on shore each man would have a pepper pot and a tube in his field dressing. In case of a wound at the front the first thing is, of course, to stay the bleeding as much as possible, and then to powder the whole surface thoroughly. The cresol tube is then introduced into the wound and small quantities of the contents are squeezed into it in various directions, endeavoring, as far as possible, to leave small portions of the paste scattered over the whole surface of the wound, not more than 1 inch apart. Some of the paste should also be smeared over the skin around the wound, and after a final dusting of the borosal powder, the emergency dressing is applied. This can be done quickly and the patient can wait till such time as the wound can be more thoroughly attended to.

For many years medical officers of the different navies were at considerable variance as to where the battle dressing-station should be located, and also as to what activities should be attempted by the medical and hospital corps during action. In our latest superdreadnaughts there will be two battle dressing-stations on each vessel, entirely behind armor. Beginning with the battle ships authorized in 1898, all our larger vessels and many of the smaller are provided with a fully equipped operating-room, dispensary, and hospital (sick bay). Quoting Medical Inspector Thomasuri of the Japanese navy: "In the older warships, constructed originally without provision for special distributing stations, it is often found that the position of a temporary distributing station has been settled on the eve of an action or engagement. Thus during the Chino-Japanese war in 1894 and 1895, the Japanese warships used the officers' wardroom as a dressing-station, and owing to its exposure to the fire of the enemy the *Hiyei* had her dressing-station destroyed at the beginning of the battle of the Yalu. The entire medical staff and all those who were at the moment in the wardroom were killed or wounded." In the days of Nelson the wounded were carried to the cockpit. "The surgeon is placed in the hold, where he should be in no danger of shot, whereby they will be deprived of all help for hurts of wounded men." This was the procedure of that period. All such questions have been disposed of after years of consideration and all such questions are provided for in the recently issued "Manual for the Medical Department of the United States Navy." In equipment and preparation no navy in the world is better provided for. Hypothetic casualties are cared for at drills and general quarters, the routes of transportation to dressing-stations and the compartments of the ship are constantly studied. Medical officers are detailed to the Naval War College, as Surgeon General Braisted stated: "To study most carefully the plans of the proposed operations, and to familiarize themselves from the military standpoint with the demands that will be made and so to prepare and equip that the campaign may not end in defeat and disaster on account of a personnel overcome by disease and disability."

Naval warfare is evolutionary, hence its casualties will be varied. The present conflict has not varied materially from the calculations of many naval strategists, except possibly in the extent of submarine activity. If two navies of equal, or nearly equal, strength were engaged in a contest for the supremacy of the

sea, or to land an expeditionary force, and an engagement between superdreadnaughts, or composite fleets of superdreadnaughts, battle cruisers, and destroyers, we would anticipate a different type of casualties than has occurred in the present war, principally in the diminished ratio of deaths from drowning. But excluding this single cause of death, all other casualties may be anticipated, and in some measure provided for.

The following is the "Detailed Organization for Relief of Wounded Aboard Ship" in the United States Navy, to which previous reference was made:

The regulations require that the medical officer shall frequently advise the divisional officers in the use of the first aid appliances. These include shell wound dressings, designed to occlude and protect the wounds caused by shell fragments, and tourniquets for the control of hemorrhage. In addition, instructions in resuscitation of the apparently drowned are given. The divisional officers in turn give instruction to the men under their immediate command. The medical officer also provides for the instruction in first aid and transportation methods of the hospital corps and stretcher men in number equal to about 2 per cent. of the complement of the ship. Turrets, handling rooms, gun stations, torpedo, fire and engine rooms, and fire control stations and other stations not readily accessible, in which men and officers are stationed in battle, should be provided with first aid appliances. Dressings for burns and scalds in engine and fire rooms, plainly labeled, should be accessible to the occupants of these stations.

Modern naval warfare presupposes a high casualty rate and a rapid accumulation of the wounded, but the casualty rate will vary widely on different ships, probably being the highest in the leading divisions. Any effective organization of medical personnel to meet the demands of the wounded in a naval engagement will usually go beyond the facilities of a single ship and will necessitate the adoption of a more comprehensive scheme of assistance external to the ship, but every vessel should be self-sustaining as far as practicable, and no effort should be spared to attain this end. When wide dispersion of the ships or other conditions render outside assistance unavailable, the measures to be adopted by the ship's resources alone during and subsequent to battle will comprise the following:

Continuous first aid to the wounded during battle on the part of the personnel at large. The effectiveness of this service will depend largely on the thoroughness with which the units have previously been instructed by the medical and division officers, as required under the regulations, and how well they have become imbued with the principle that first aid, calmly administered by themselves or comrades, represents the maximum service that can be rendered the wounded during the height of a naval action. The ship's force should have been warned that elaborate measures of treatment or extensive transportation during battle are inadvisable and impracticable. The wounded man after the administration of first aid, should be placed to one side where his presence will be the least felt, and where he will not incommode or disturb the fighting force.

In a suspension or lull in the battle, or after the engagement upon notice from the central station, and when prompt treatment of the wounded in or near the fighting position is denied or deferred for any reason, the stretcher men may be required to seek out and transport certain of the wounded to the battle dressing stations. It should be the first duty of the medical officer to give attention to such of the wounded as may render further service at the guns or elsewhere after the application of the appropriate treatment. These men should be promptly returned to their stations. It must be borne in mind that the primary purpose of first aid is to keep as many effectives at their stations as possible. A graver class of injuries may require deliberate surgical intervention, but extensive procedures on the part of the ship's force are only legitimate if evacuation of the wounded, for any reason, is delayed or rendered inadvisable. The personnel of the Medical Department should institute a search for the seriously wounded to afford them relief and to prepare a list of the dead as soon as practicable. To assure the wounded early and efficient treatment, effect their rapid removal from the fighting ship, and insure a continuous record of each case is the object of the organization.

General Quarters: When at exercise simulating action (in so far as it is possible to do so) the medical officer will employ this opportunity to instruct the personnel of the dressing stations in their duties, insuring himself that all members of the ambulance party are competent to administer first aid; that they understand their stations and the limits of the ship assigned to them, and the usual routes of transport to and from the groups of personnel. At drill the dressing stations will not be equipped in advance of the signal "general quarters."

Battle Dressing Stations: Battle dressing stations should be easy of access and located behind armor. Routes to the dressing stations should be indicated, by an arrow and a red cross. There should be at least two, one installed as a main or primary dressing station, and one as an accessory or secondary station. The stations should have an abundant supply of drinking water, all connections being installed behind armor. As these connections might nevertheless be interrupted, storage tanks for drinking water should be provided, having a capacity sufficient to furnish in first-class ships 1 gallon of water per man, allowing for 20 per cent. of wounded. Dressing stations should also be well ventilated and well lighted, and as cool as the surroundings will permit. It has been estimated that each 36 square feet of area should be provided with one cargo light of approximately 200 candlepower (six lamps). If possible, connections for electric lights should be distributed on two circuits; lanterns or some other means of lighting should be available in case the electric lighting circuits suffer interruption. Electric or steam connections should be provided for the water and instrument and dressing sterilizers. In ships wherein proper connections are provided, sterilizers should be removed from the surgical operating room and set up in the main dressing station prior to the action. When so installed they should remain during the period of hostilities. If possible there should be some provision made for the drainage of this space. In the vicinity of the dressing station or adjoining it there should be arranged a berthing space for the wounded sufficient to accommodate about 10 per cent. of the complement. This space should be easy of access from the dressing station, and like the latter, have an abundant air supply. In addition to the usual equipment transferred from the sick bay and operating room and distributed in the dressing stations, the following articles should be provided: electric fans with proper connections; half tubs; water buckets; swabs and brooms; washing stands; tables for apparatus; shelves; supports or hooks for irrigators; dressing lockers; bedding for the berthing space for wounded; restoratives, etc. A reserve supply of surgical dressings should be available on this deck in a secondary station, behind armor and accessible for distribution to the dressing stations if required.

The station of the medical officer of the ship during action will, as a rule, be at the main (operating) dressing station, where he will see that the necessary equipment is provided.

Preliminary to battle the personnel should be required to bathe and put on clean underclothing.

Means of identification of the dead should be provided for each officer and man.

The organization of the Medical Department, showing all the dispositions under battle conditions, should be worked out for the ship as soon after going into commission as practicable. Provisions should be made for the instruction of officers and men in first aid as described above; and for a definite organization of the personnel of these stations, as well as for their progressive instruction in first aid and transportation methods. During action the difficulties of transportation preclude any extensive exercise of the functions of the stretcher men, and as their most important duties

are to be performed after the action is over, or during intervals of action, they will avoid exposing themselves unnecessarily. Such emergency work as is feasible will be performed.

The galley and bakery of ships of old types if intact after the engagement may be placed at the disposition of the medical officer for preparing additional hot water and dressings and for sterilizing instruments.

Operating Room: If not dismantled, the ship's operating room may be made use of after the action to supplement the work of the dressing stations, provided the removal of the gravely wounded direct to hospital ships is not feasible.

Transportation of Wounded: Apparatus will be provided by the medical department of the ship for the transportation of the wounded, but complicated appliances liable to displacement will be avoided. Simple measures designed to facilitate transporting wounded by stretcher directly to the dressing stations by the most convenient hatch, down which they will be lowered or passed by hand to the deck below, or over the side to boats from the hospital ship, are to be preferred to more elaborate means of transport.

A suitable place should be assigned for the disposition of the dead.

When the medical transport or hospital ship is at hand the seriously wounded should be transferred as promptly as is consistent with their welfare. A fighting ship should be cleared of such cases as soon as possible after an action, in order that she may be ready to reengage in battle. On the other hand, patients who will probably soon be fit for duty should be retained on board, and these may constitute a large proportion of all cases.

There would seem to be no great difficulty in teaching men of the mentality of a navy such as ours to properly apply a first-aid dressing, and experience has demonstrated that there is none. When the individual applies his first-aid dressing self-preservation will inspire him to do it properly. When it is impossible for him to apply it all that is needed on the part of his comrades, in addition to proper instruction and equipment, is presence of mind. Notwithstanding the instructions furnished Japanese sailors during their last war, Surgeon General Suzuki said he was somewhat disappointed that the wounded had not carried out his instructions more carefully. About one third of the wounded did apply, or had applied, the first-aid before coming to the dressing-station; the remainder simply grasped the wounded portion or member and came to the dressing-station.

All will agree with Volkmann, "The fate of the wounded rests on the hands of the one who applies the first dressing."

The effects of powder-gases and smoke is a cause of serious concern during a naval battle. The powder in shells is composed of nitroglycerin, gun cotton, nitrocellulose, and a deterrent; the combustion products include CO and NO_2. "From the composition of powder-gases," writes Stokes, "it is evident that we shall have two types of poisoning; one resembling illuminating gas poisoning, the other irritative in its effects. A larger dosage of powder-gas may lead to unconsciousness and death." A shell exploding in a closed compartment is more serious than one in the open air, on account of the concentration of the gases. Spear writes, "The fumes from bursting Shimose shells in closed compartments had the effect of making the men exposed weak and nauseated and causing a sensation of weakening, without a loss of consciousness. Some of these men recovered quickly; others took days before all symptoms had disappeared." Stokes concludes, "It is probable that the undue proportion of prostration attending shell wounds, formerly attributed to shock, is really due in part, at least, to gas poisoning and not to injury alone." In this connection, the following extract from an account of "Wounded Treated at the Royal Naval Hospital, Shotley," by Fleet Surgeon L. W. Burton, R. N., is interesting (out of 197 severe cases there were eleven cases resulting from the inhalation of lyddite fumes, two resulting fatally):

> I could see no difference, clinically, between the effects produced on German seamen by the inhalation of fumes from lyddite shells and on our men from the fumes of the German mines, so I suspect the noxious gases produced by the explosion in both are very similar, and that the effect is due mainly to nitrous fumes, such as are given off by the burning, not detonation, of almost any of the nitro explosives. These cases proved the most insidious and most rapidly fatal of any which came under treatment. Patients who were apparently suffering very little inconvenience on admission rapidly became asphyxiated and died within twelve or twenty-four hours, with all the symptoms of an acute capillary bronchitis or bronchopneumonia, which evidently resulted from the irritant action of the fumes on the vesicles and mucous membrane of the bronchioles. They first complained of some pain and tightness around the chest, which gradually became worse and was accompanied by cough, marked dyspnea, and the expectoration of blood-stained frothy mucus. As the minute tubes became more and more aggravated and violent, efforts were made to aerate the blood, as was seen by the sucking in of the suprasternal, supraclavicular and intercostal spaces with each breath. Respiratory distress became more and more marked as the inspiratory efforts became less effectual, and the patient gradually passed into a state of coma, and finally became quite unconscious. The heart beat feebly for some time after respiration ceased, and after death a copious discharge of blood-stained frothy mucus from the mouth and nostrils continued. As regards the treatment, there is little to be said. Some temporary benefit resulted from the use of oxygen and the bronchitis kettle, but no medicines tried seemed to retard the rapidly fatal progress.

Staff Surgeon Hewitt, R. N., in his "Report on the Casualties in Action Between the *Pegasus* and *Konigsberg*," states: "The fumes of the high explosive powder used seem to have a sickly, stupefying effect and perhaps cause a feeling of dizziness, but those may have been due to concussion. I, personally, had been breathing more deeply than normal in assisting a wounded man up a ladder from the torpedo flat, where the fumes were particularly dense, and experienced a feeling of nausea and dizziness. For several days after, on deep breathing, one seemed to exhale the same fumes. Others were affected in a similar manner." Surgeon Hewitt was wounded in the action.

The menace of smoke may be appreciated when it is deemed necessary to protect the smoke stacks of the new superdreadnaughts with 13-inch armor. The supply ventilating apparatus of a warship cannot be operated during an action on account of the danger of forcing products of combustion into the interior of a ship. Nothing more disconcerting could happen than the perforation of a smoke stack in any part from which the smoke would pour into the occupied spaces.

From the foregoing it is evident that the surgery of naval warfare of today, other than first-aid and emergency measures, must be most conservative until action has entirely ceased. The conservatism disappears partially with the cessation of action, and before the arrival of the hospital ship or transport, and not absolutely until the sanitary base is reached. Chloroform must be the anesthetic, on account of its rapidity. Shattered limbs will require amputation, and collapse from abdominal hemorrhage may require laparotomy.

Severed nerve ends must be united and dyspnea from throat wounds and depressed fractures should be regarded as surgical emergencies. The immobilization of fractures and search for foreign bodies should be performed as expeditiously as circumstances will allow, until roentgenoscopy is available. Burns, even the most extensive, require picric acid in saturated solution applied with thick layers of gauze kept well moistened. For shock, morphin in half-grain doses, fresh air and physiologic salt solution should be used.

The cause of the greatest number of deaths during naval warfare is the same as during peace, namely, drowning. During the Russo-Japanese war out of a total of 1,891 deaths in the Japanese navy, 1,445 were from drowning. During the engagement off the Falkland Islands, between the British and German fleets, of a total complement of 2,177 on the *Scharnhorst, Gneisau, Leipzig,* and *Nurnberg,* the British Admiralty reported "only a few saved." The casualties in the British navy, from the beginning of the war up to March 18, 1915, were 6,668. Most of these were probably from the sinking of Admiral Cradock's fleet off the coasts of Chile, and that of the *Cressy, Aboukir, Hogue,* and *Hawke* off the European coast.

Submarines, which have proved so efficient in offensive operations during this war, have many elements of danger to their crews. P. A. Surgeon W. H. Halsey, U. S. Navy, from experience with this type of craft, summarizes, to wit:

The dangers from without may be from striking an obstruction when running submerged, striking an obstruction when coming to the surface after a submerged run, diving to too great a depth to be able to acquire sufficient buoyancy to come to the surface, as for example by reason of an abrupt dive, leaks in the water-tight body of the boat and vitiation of the air in the boat due to constant rebreathing and the running of the engines with the batteries on a long submerged run, or when it is impossible to come to the surface.

The dangers from within comprise gasoline poisoning in the gasoline type of boat, which may occur from breathing the fumes of the raw or burned gas and demonstrates itself in various forms of nervous excitation. Wild delirium is frequently seen in gasoline poisoning, and sometimes coma of the profound type. Poisoning by hydrochloric acid gas, from leaks into the battery tanks, may occur. The electrolyte is sulphuric acid and when salt water leaks into it hydrochloric acid gas spreads through the boat with great rapidity; men are overcome by the gas almost instantaneously. There is a coughing, choking and gasping for air, and then collapse. Battery explosions sometimes occur, due to the rapid combination of the nascent battery hydrogen with oxygen; this is usually due to defective battery ventilation. Back fire in the gasoline exhaust, sometimes due to ignition of unburned gases in the exhaust, frequently occurs.

Climate and Tuberculosis.—Climate exercises absolutely no influence on the more or less marked frequency of the disease. Tuberculosis takes place just as frequently and its appearance is just as serious among the Esquimaux and the Laplanders as among the negroes of the Congo State or the Kanaki of the New Hebrides. If, generally speaking, these races suffer less than the Europeans, this is exclusively owing to their habit of living together in less numerous groups, and also owing to the nomadic life which some of them habitually lead.—A. Calmette-Lille.

THE RÔLE OF THE NOSE, THROAT AND ACCESSORY SINUSES IN THE ETIOLOGY OF CHRONIC INFECTIOUS ARTHRITIS *

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For many years it has been recognized that perhaps the chief problem to be considered in chronic infectious arthritis is the determination of the etiologic factor within the body. It is reasonable to suppose that if the arthritis be due to some suppurative process, the joint condition *should* be relieved provided the etiologic factor can be found and removed. In the presence of more than one source of infection, it may require clear judgment and careful analysis of the history and physical findings, in order to determine which factor is responsible for the arthritis in a particular case.

Every organ, every secretion, and nearly every inch of the body has been carefully scrutinized in an attempt to determine the cause of the disease in numerous cases of chronic infectious arthritis. One of the regions of the body which has seemed to offer a fruitful field for such investigation is the domain of the "nose and throat man"—the ears, nose, throat and accessory sinuses.

Many articles have been written of late years, placing emphasis on the importance of these organs in their relation to arthritis. Some of the recent writers have attributed so much importance to this region, as the site of infection in a large number of cases of arthritis, that I was led to undertake the investigation on which this paper is based.

The experience of many workers in this field seems to show an undoubted connection between tonsillitis and arthritis in many cases, especially those acute in onset and character. This study was undertaken to determine, if possible, what percentage of cases of chronic infectious arthritis were found to have coexisting disease of the tonsils, and of the ears, nose and accessory sinuses as well. As would naturally be expected, such examinations would lead to the discovery of disease in the teeth and gums. Whenever possible the dental conditions were studied, their possible relationship to the arthritis analyzed, and proper treatment instituted if found necessary. We also wished to determine the efficacy of treatment by the nose and throat surgeons in these cases, and have endeavored to trace every patient operated on by them, and to ascertain the effect of this treatment on the arthritis.

I wish to state at the outset that I did not share the opinion of those workers in this field who believe that a recognizable focal infection is present in nearly all cases of chronic infectious arthritis. Nor could I be convinced, from my experience in these cases, that the removal of a focal infection would necessarily cure an arthritis of some months' duration. It is a matter of common experience with those who see a large number of these cases, that a brilliant result is occasionally obtained by the removal of tonsils containing pus pockets, or by the drainage of a suppurating sinus. Similar results are obtained when a focus of infection anywhere in the body is removed. In my experience

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such a happy outcome in the case of chronic infectious arthritis is the exception rather than the rule.

Most of the cases of chronic infectious arthritis which have come to the orthopedic clinics of the Rhode Island Hospital and St. Joseph's Hospital during the past two years, in which the etiology was not readily determined, have been referred to the ear, nose and throat departments of these hospitals for examination. This included a majority of the cases of infectious arthritis. Cases in which a gonorrheal infection had immediately preceded the onset of the joint condition were not referred for examination, since the disease was usually limited to one joint, and the connection between the gonorrhea and the arthritis seemed fairly well established.

The cases were not selected in any way, but, as they appeared, were referred for examination and treatment by the nose and throat surgeons when deemed necessary by them. The cases were nearly all polyarticular in distribution, and were the bulk of that interesting and often puzzling group of joint cases, encountered in the daily routine of any adult orthopedic clinic. Cases were referred for examination, even in the absence of any symptoms pointing to disease of the ear, nose, throat or sinuses.

Otherwise these cases were all treated in the routine manner. They were referred to other departments of the hospitals, when necessary, for consultation and treatment, and laboratory and Roentgen investigations were made in nearly every case. In classifying these cases as positive or negative, according as they showed disease of the nose, throat or sinuses, or did not, the opinion of the nose and throat surgeon has been taken as the sole criterion, even in cases in which it seemed to the orthopedic surgeons that some other etiology was probable.

The result of this investigation is shown in Table 1:

TABLE 1.—PREPONDERANCE OF TONSILLAR INFECTION

Total number of cases studied	61
Cases with doubtful nose and throat evidence	3
Cases with negative nose and throat evidence	28
Cases with positive nose and throat evidence	30
Cases with positive nose and throat evidence in which nose or throat operation was performed	12
Cases with positive nose and throat evidence in which such operation was not performed	18

In Table 1 the large proportion of cases showing tonsillar infection is noteworthy.

Of the 12 patients operated on, the tonsils were removed in 9, pockets in the tonsils were opened in 1, the frontal sinus was drained in 1, and a deviated septum corrected in 1. In two of the cases of tonsillectomy the adenoids were also removed, and in another case the midturbinate was removed to drain the ethmoid cells.

Of the 18 patients not operated on, the tonsils were infected in 12, there was sinusitis in 3, otitis media in 1, necrosed teeth in 1, and Riggs' disease in 1.

The condition of the arthritis following operation for disease in the nose or throat in 12 cases is shown in Table 2:

TABLE 2.—CASES SHOWING POSITIVE NOSE OR THROAT DISEASE AFTER OPERATION

Marked improvement	2
Slow but gradual improvement	3
No improvement (one with ankylosis)	2
Better in one joint, worse in two others	1
Worse in joints after operation	1
Not found	3
	12

The advice given in 18 cases with positive nose and throat evidence in which operation was not performed is shown in Table 3:

TABLE 3.—CASES SHOWING POSITIVE NOSE AND THROAT AFFECTIONS NOT OPERATED ON

Operation advised but either refused or not yet performed (4 improved without operation)	10
Operation not advised (2 improved without treatment)	4
Operation not advised but treatment advised (1 improved without treatment)	2
Referred to dentist	2
	18

Of the 28 patients with negative nose and throat evidence, 5 had necrotic teeth, 3 had Riggs' disease, and 2 had had arthritis following removal of adenoids and tonsils, in one case six weeks, in the other nine months, after the operation. In the last two cases no connection between the operation and the arthritis is presupposed. In making this report we feel that care should be taken in drawing conclusions from a small number of cases. The difficulties in the way of proper deductions are many. It is a well known fact that deep in its crypts the most innocent appearing tonsil may harbor micro-organisms of a harmful nature. The *Streptococcus hemolyticus*, which is the special agent found in associated joint lesions, lies in deep chronic abscesses and sealed crypts. Consequently it is very difficult in a doubtful case to determine whether operation should be urged or decried. In the case of an infected sinus, the difficulty of prov-

TABLE 4.—POSITIVE NOSE AND THROAT EVIDENCE IN CASES WITH OPERATION

Name	Age	Joints	Duration	Nose or Throat Condition	Operation	Results
E.	9	L. knee	2 weeks	Tonsils infected, adenoids present	Tonsillectomy	Improved
L.	23	L. elbow, r. knee, r. wrist, l. ankle	5 months	Acute tonsillitis	Tonsillectomy	Slight gradual improvement
E.	26	Elbows, wrists, hands, r. knee	7-8 years	Tonsils infected, adenoids present	Tonsillectomy, adenectomy	No improvement (ankylosis)
K.	27	Hands, wrists, r. knee, r. elbow	1¼ years	Tonsils infected	Tonsillectomy	R. wrist better; l. wrist and l. elbow worse
E.	28	Shoulder, knees, wrists, ankles	6 months	Tonsils infected	Tonsillectomy	Throat better, joints worse
C.	24	Shoulders, knees, feet	6 months	Deviated septum	Septum corrected	Not found
M.	48	L. knee, l. elbow, r. wrist	5 years	Tonsils infected, teeth necrosed	Tonsillectomy (arthrotomy)	Improved, both throat and joints
D.	12	L. hip, hands, r. knee	3 months	Tonsils infected	Tonsillectomy	Very slight, gradual improvement
C.	21	Knees, ankles, wrists	2 months	Frontal sinusitis	Sinus drained	Not found
D.	14	L. ankle, knees, hips	7 years	Tonsils infected	Tonsillectomy	Joint condition no better, but less pain
W.	44	Shoulders, knees, spine	4 months	Tonsils infected	Tonsillectomy, adenectomy	Slow, gradual improvement
G.	42	Wrists, hips, ankles	11 years	Pus on midturbinate	Turbinate removed, pockets in tonsils opened	Not found

ing its relationship to an existing arthritis is even greater.

It would have been profitable to have investigated other focal sources of infection in these joint cases, such as necrotic teeth, Riggs' disease, lesions of the genito-urinary and gastro-intestinal tracts, gallbladder and other infections. Since the study was limited to the nose, throat and accessory sinuses, however, the conclusions must be based on a study of diseases of those organs.

The results of operative treatment in these cases were, on the whole, not encouraging. The removal of tonsils or the draining of a suppurating sinus have produced marked improvement in the joint conditions in these cases in only a few instances. Often there has been slow, gradual improvement as is seen under routine orthopedic treatment. The general condition of the patient has improved after the nose and throat operation in nearly every case. It seemed as if a load had been removed and the general health was much better.

It is to be remembered that the majority of these cases are chronic in nature, and marked improvement is not reasonably to be expected except with the lapse of considerable time. This is even more true when ankylosis is present.

In most of these cases the damage seems to occur early in the course of the disease. The time for investigation and treatment of a focus is in the early stages or even before the onset of the arthritis. Patients who have had previous attacks and have recovered without permanent damage to the joints should have the focus removed, if it can be discovered, to prevent the recurrence of other attacks. This is especially true in the numerous cases in which attacks of tonsillitis have been followed by arthritis. When permanent damage to the joint structures has occurred, but little improvement may be expected from removal of any focus of infection, beyond the improvement in the general health.

The difficulty lies in determining with certainty that the focus which has been discovered is really the cause of the arthritis. Many cases show diseased tonsils or a suppurating sinus coexistent with carious teeth or Riggs' disease. Which factor in such a case shall be considered the responsible cause? The removal of one or all of these foci may have no beneficial effect on the arthritis, and we may find that absorption from the gastro-intestinal tract, or some other source, is the real cause.

Our experience has shown that the greatest benefit in these cases is to be expected from stimulating measures tending to build up the general health of the patient, trusting to later improvement in the local joint conditions as the patient responded to treatment.

266 Benefit Street.

TABLE 5.—POSITIVE NOSE AND THROAT EVIDENCE IN CASES WITHOUT OPERATION

Name	Age	Joints	Duration	Nose or Throat Condition	Operation Advised	Results
G.	35	Knees, ankles	3 weeks	Frontal sinusitis	None	Not found
F.	48	Shoulders, knees, hips, wrists	5 months	Left otitis media	None	Improved
D.	12	Knees, r. ankle	6 months	R. tonsil infected	Tonsillectomy	Improved
D.	8	Knees, feet	4 months	Tonsils infected, adenoids present	Tonsillectomy, adenectomy	Improved
D.	54	R. wrist, r. elbow, r. knee	3 months	Tonsils infected	Tonsillectomy	Not found
B.	34	Feet, l. knee	2 months	Tonsils infected	Tonsillectomy	Not found
V.	21	Knees, hip, ankle, hand, spine	3 weeks	Tonsils infected	Tonsillectomy	Not found
S.	42	Wrist, knee, shoulder, ankle	3 months	Mucopus in epipharynx Riggs' disease	Teeth extracted	No improvement (ankylosis)
B.	45	Hands, feet, shoulder, knees	11 years	Suppurative ethmoiditis and polypi	Turbinectomy	Slight, gradual improvement
W. B.	26	R. ankle, r. knee	1½ years	Necrosed teeth	Referred to dentist	Not found
E.	18	Feet, hands	5 months	Tonsillitis, ethmoiditis?	None	Not found
M.	48	Feet, r. thumb, r. knee	4 months	Pockets in tonsils, sinusitis, Riggs' disease	None	Improved
S.	56	Wrists, ankles, knees	2 years	Tonsils infected	Tonsillectomy	Not found
K.	38	Shoulders, knees, hands, spine, feet	3 months	Tonsils infected	Tonsillectomy	Not found
B. B.	15	Knees, feet, wrists, elbows, shoulders	4 weeks	Tonsils infected, adenoids present	Tonsillectomy, adenectomy	Much improved
L.	39	Hands, r. hip, r. ankle	2½ years	Otitis media, sinusitis.	None	Died of periostitis femur
C.	24	Knees, shoulders	1½ years	Tonsils infected	Tonsillectomy	Not found
W.	32	Knees, feet, shoulders, ankles	6 months	Tonsils infected, Riggs' disease	None	Slight, gradual improvement

THE CLINICAL TYPE OF ARTHRITIS ORIGINATING ABOUT THE TEETH *

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The etiology of rheumatism has attained a new position in the last few years, and to Alfred Mantle, consulting physician to the Royal Halifax Infirmary, Harrogate, England, should be credited the first work leading to change of position concerning the etiology of this disease. When he commenced his work, bacteriology was in its infancy. At a meeting of the British Medical Association which was held at Brighton, he read a paper in the section of medicine, presided over by the late Sir William Broadbent, the title being, "The Etiology of Rheumatism Considered from a Bacteriological Point of View,"[1] at which time he demonstrated the organisms he had found both macroscopically in culture and microscopically.

Even prior to that time, Mantle had discussed the frequency of rheumatic symptoms in scarlatina.[2] His observations in this paper suggested that the

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Mantle, Alfred: The Etiology of Rheumatism Considered from a Bacterial Point of View, Brit. Med. Jour., 1877, i.

2. Mantle: Quart. Med. Jour., quoted by Mantet, Practitioner, London, January, 1912.

throat, joints, and serous membranes become infected during bacterial invasion, and he suggested the possibility of acute rheumatism itself having a like origin. He also witnessed the two epidemics of rheumatic fever which pointed strongly to infection. He embodied his clinical observations in a thesis which he sent up for the Doctorate of Medicine and naively remarks that these views did not gain acceptance by the examiners, one of them being the late Dr. W. Miller Ord. Though this dampened his enthusiasm, his thesis was accepted. The material on which he based his later paper, published in 1877, was founded on a study of a typical case of acute rheumatism from which he obtained under antiseptic precautions, by means of a sterilized hypodermic syringe, a dram of serum withdrawn from the knee-joint. This he placed in sterilized gelatinized meat infusion, which was placed in an incubator. These plantings produced copious bacterial growth. From six other cases, over a period of several months, he obtained serum from effused joints with like results. Following this he made blood cultures in sixteen cases, taking every precaution to prevent contamination from without, and he tells us in most of these cultures, bacteria were found. Subsequent to this, he was permitted, by the Home Office, two experiments which were conducted in the Durham College of Medicine, in which he injected two monkeys with his cultures. These experiments failed to produce the disease in the monkeys, however, and for the time being, his research was set aside.

The next work of importance in England in this line was published by Poynton and Paine[3] in 1900, though between 1877 and 1900 considerable research in this field was done on the continent. Guttman in 1877, Birch-Hirschfeld, Bouchard and Charin, Triboulet, Sahli and Sacaze "found organisms in acute rheumatism." "In 1891 Achalme first found his bacillus. In 1894 several observers in Germany, Italy and France, described organisms occurring in joint fluids and blood of patients suffering from acute and 'chronic' rheumatism." In 1895 Newsholm demonstrated that the disease might be epidemic and in the same year Leyden isolated a delicate diplococcus. Mantle tells us Achalme's results seemed nearest his own. In 1900 Poynton and Paine[3] published a letter in the *Lancet*, in which they fully acknowledged Dr. Mantle's priority in this field, though their work was undertaken and accomplished without knowledge of Doctor Mantle's work until after their attention was called to it by the editor of the *Lancet*. Beatson and Ainley Walker in 1903[4] confirmed the results published by Poynton and Paine and others isolating a diplococcus in fifteen cases, and Beattie in 1904,[5] produced a combination of lesions similar to those of rheumatic fever in man.

That much wonderful work has been done in later years confirming this earlier work and largely adding to what we have already gained is known to all. It would be valuable did time permit to refer to the bibliography of this subject in detail. I cannot in passing neglect, however, to especially speak of the work of Rosenow[6] on "The Etiology of Arthritis Deformans," and many other articles from this same author; "Experimental Myocarditis," by Leila Jackson,[7] and the work of Klotz,[8] from the pathologic laboratories of the University of Pittsburgh.

That inflammation of the joints can be caused by many organisms which gain access to the para-articular tissues is probably true. We are all acquainted with the classic effects of the gonococcus when distributed in these tissues. John B. Murphy, in a paper read before the Hennepin County Medical Association, cited from his practice a case of joint infection in which the colon bacillus was isolated. The relationship of the *Streptococcus viridans* to chronic joint infection has been firmly fixed by Rosenow and other observers, but so far as I know, little has been done to establish dental-path relationship for the admission of infectious material causative of joint lesions. Perhaps the first contribution directly relating dental infections to joint infections was published by Kenneth Goadby,[9] in which he describes a series of three cases of chronic arthritis of the deformans type wherein, by the removal of infected teeth, he was able to cure these cases, one of which had been completely disabled for a period of many months. Coincident with the treatment of these cases, he was able to isolate an organism termed by him "streptobacillus malae," which he was able to grow on egg agar. He also exhibts a streptococcus from an infective gingivitis to show the morphologic difference between it and his *Streptobacillus malae*. In this article, he recounts the result of animal inoculation in which he was able to produce by the introduction of his *Streptobacillus malae*, disease in the joints of rabbits. Just what organism this *Streptobacillus malae* is, I do not fully understand. There is not the slightest doubt, however, that his work is valuable and it is doubtless true that his *Streptobacillus malae* was in the particular cases cited by him responsible for the joint infections described. I believe to him must be given the credit for first establishing the fact that the dental path is an important avenue of infection for the planting of rheumatism.

In my own work since 1896, I have noted a seeming relationship between mouth sepsis and chronic rheumatism, because of the coincidence of cure of rheumatism following the extraction of abscessed teeth or the cure of a pyorrhea. This had occurred in my experience sufficiently often to occasionally call forth inquiry from the patient. Therefore I have been keeping rather carefully the records of those cases in which such results were noted, and, when my attention was drawn to Goadby's contribution to the literature of rheumatism coincident with the recovery of a patient, who had experienced marked relief from a somewhat troublesome joint inflammation, involving the knees, ankles, and insteps, following drainage of a chronic dental abscess, it caused an increased interest on my part in chronic joint infections, and I at once sought opportunity to make a careful study of them, and began with the case of a bedridden woman, whose history was briefly the following:

The patient had always been strong and healthy and able to do her own work. She was exposed to rain and cold, contracting as a result a severe torticollis, which was succeeded by inflammation of the shoulders, later involving the

3. Poynton and Paine: Lancet, London, 1900, xi, 1306.
4. Beatson, R. M., and Walker, E. W. A.: Brit. Med. Jour., 1903, i, 237.
5. Beattie: Jour. Path. and Bacteriol., 1904, ix, 272.
6. Rosenow, E. C.: Etiology of Arthritis Deformans, The Journal A. M. A., April 11, 1914, p. 1146.
7. Jackson, Leila: Experimental Myocarditis, Jour. Infect. Dis., September, 1912, p. 243.
8. Klotz: Arterial Lesions Associated with Rheumatic Fever, Jour. Path. and Bacteriol., 1913, xviii.
9. Goadby, Kenneth: Practitioner, London, 1912, lxxxviii, 107.

knees, ankles, and insteps. Though this patient had a considerable mouth infection, the treatment directed toward the teeth seemed to do little or no good. A vaccine was prepared and administered with little or no benefit.

Despite the discouragement in this case, I persisted in this work and when the opportunity to do a systematic research, supported by animal inoculation, presented itself through the use of funds appropriated by the National Dental Association, I was enabled to continue my study in the university hospital of the school of medicine, in cooperation with the medical staff of the college of medicine and with the constant help of Dr. Arthur T. Henrici, instructor in bacteriology in the school of medicine. I am also indebted to Dr. Harold J. Leonard, who has carried out the mouth treatment in those patients resident in the university hospital, of which there were in all sixteen cases, seven of which gave an acute history. Our method of study has been briefly as follows:

When patients presenting joint infection have entered the hospital, they have been referred to us for investigation and treatment of mouth conditions, whereupon careful roentgenographic examination of the teeth and jaws has been made in the roentgenogram laboratories of the hospital. Whenever dental abscesses were present, we have isolated the abscessed teeth with dry gauze, cleansing the tooth or root with iodin, and whenever possible, cauterizing the tissue about the neck of the tooth, then extracting the tooth and biting off the root tips with sterile forceps, which tissues have been immediately dropped into culture mediums. These plantings have invariably produced, among other organisms, the *Streptococcus viridans* and this has been the organism which we have used in our animal inoculation in the intensive study of a certain number of these cases.

Though we have carried on intensive study and animal inoculation from material obtained from a comparatively few of the patients presented in this series, we have invariably found the *Streptococcus viridans* present in the confined dental abscess, and, in order to satisfy ourselves as to its common presence in the tissues about the teeth, we have cultured up to the present time from 220 patients and have invariably found this organism to be present not only in the confined dental abscess but in the superficial tissues of the peridental membrane about the teeth. We have found this so constantly that we were impressed with the idea that it must always be present. We, therefore, have attempted to obtain teeth which were free from *Streptococcus viridans* and to that end have extracted a number of living teeth containing healthy pulps. The roots of these living teeth with healthy pulps have usually also afforded growth of *Streptococcus viridans* when planted in the manner just described unless we cauterized the gingival crevice. Following this technic, we have been able to find, out of a total of twenty vital teeth examined, ten teeth containing living pulps, the roots of which have proved to be germ-free when planted in broth. We believe that the dental path is commonly infested with *Streptococcus viridans*, not only the superficial tissues immediately surrounding the teeth but all dental abscesses.

We have been able to produce typical joint lesions in three rabbits by its inoculation. We have also been able to secure a large number of satisfactory recoveries from joint infection by the elimination of peridental infections, in some cases by extraction, and in others, by drainage of abscesses or the elimination of pyorrhea pockets. In all, we have in our series 127 cases which it has been my fortune to observe including the 16 cases before mentioned in which the patients were resident in the university hospital. Twenty-five patients have been bedridden, 102 have been of the ambulatory type, only 15 of the 127 commenced with chill and fever, and of these 15 commencing with chills and fever, tonsil and throat infection was noted in all save 2. The infection in these two cases was due to a rapid and excessive work to eliminate pyorrhea pockets and abscesses, suddenly overloading the circulation of the patient with bacteria from these lesions.

The bedridden cases with few exceptions were of the chronic type, some of them being absolutely helpless, two of them in one family, man and wife, the man at present has been in bed two years, and incapable of doing anything for himself, the wife having been helpless now for eight years. The extraction of the abscessed teeth for the man produced streptococci in rich culture, though he was unbenefited by the extraction or by a vaccine subsequently administered from the cultures obtained from his abscesses. The wife refused treatment, though the gums in this case contained the roots of twenty broken-off teeth. As this patient declined to go to the hospital, no treatment was attempted.

The 102 ambulatory cases very from individuals presenting a mild soreness of the joints to persons going about on crutches. They vary in length of time of the disease from a few weeks to many years. None of them have complained of either chill or fever, the disease beginning in the great majority of cases with tenderness in the muscles of the neck, particularly the sternocleidomastoid. Oftentimes, the mandibular joint is involved. Following tenderness in the mandibular joint and muscles of the neck, the shoulders are commonly attacked. In fifty of these cases, however, the first tenderness noted was in the finger joints, oftentimes a single joint being sore for a considerable period of time before the others commenced to be tender.

Following the fingers, the shoulder joint is next in frequence. In the lower extremity, the knee joint has been first attacked in 65 per cent. Later the joints of the feet, and of these, the metatarsopharyngeal articulation of the great toe is most often attacked. The disease when of the dental-path origin seems to be characterized by exacerbation and remission. Sometimes, weeks or months intervene between them, but each exacerbation is generally a little worse to bear than its predecessor. Fever is rarely present, hyperplasia of the connective tissues about the joints being constantly present. This hyperplasia of the tissue about the joint gradually leads to great thickening and effusion and finally to exostosis. One of the fairly constant features is the partial disarticulation of many of the phalangeal joints of both hands and feet.

Eventual destruction of the articular surfaces of the knee joints is to be expected, though it is comparatively slow in its progress. First evidence of destruction of the articular surface is made evident to the patient by a mild crepitus accompanied by pain, which crepitus sometimes increases to a sufficient degree to be heard at a distance of several feet when the joint is put in motion. It would seem, therefore, that arthritis of dental-path origin is characterized by slow onset with exacerbations and remissions, which exacerbations

seem coincident with the filling to distention of dental abscesses or retention of pus from deep pyorrhea pockets, which drain directly into the circulation.

The amount of material absorbed may be great, as a pyorrhea case with one-quarter inch average depth of pocket has 7½ inches of ulcerating surface from which to absorb pus, which in the end firmly seats disease in the tissues of the individual. I have constantly noted exacerbation of joint inflammation following surgical treatment of pyorrhea or the curettage of alevolar abscesses, and exacerbation is particularly likely to occur as tension of continued abscess fluid increases.

Treatment of pyorrhea pockets by curettage and evacuation of dental abscesses confers a double benefit. Such surgical interference necessarily inoculates the patient with a large number of organisms, inducing an effect similar to that of an efficient vaccine, with the added advantage that the constant supply is shut off from the focus disturbed. When many pyorrhea pockets or abscesses exist, it is important to permit from three to six days to intervene between treatments in order to gain the full advantage of what might be called surgical autoinoculation. Certain it is that the above method brings about a constant and permanent gain generally ending in cure, whereas if sudden complete extirpation of all foci is practiced, as, for example, extraction of all the teeth at once, as is done in some instances, or extraction of all the teeth and removal of tonsils on the same day, the end result will be positive harm.

This type of arthritis is easily controlled when of dental origin, if the foci of infection are early recognized and eliminated. When, however, such foci obtain in an active state for a considerable period of time, the disease becomes so firmly fixed that elimination of the primary focus does little in the way of repair, though elimination does limit further progress of the disease. The kidney, blood vessels and heart relationships in arthritis of dental-path origin are similar to those that exist with other types of arthritis, for in our experimental work we find that while organisms obtained in the dental path may cause acute inflammation in the joints of animals inoculated, they also attack heart, kidney and blood vessels. The dental lesion presents a very favorable site from which to secure the offending organism for the purpose of obtaining material for a vaccine, and the elimination of the dental neighborhood infection by extraction is always helpful if such extraction is carried on at intervals and treatment given gradually, whereas if elimination is undertaken rapidly and by rough surgical procedure, the disease is often unbenefited or made worse.

The great majority of cases wherein we have myositis accompanied by inflammation of articular and periarticular tissues without marked pathologic changes in the joints themselves almost invariably may be permanently cured by elimination of primary foci. When cure in this type of case does not so occur, an autogenous vaccine, the material for which should be obtained during surgical treatment, may be of great benefit. The greatest thought regarding this disease when of dental-path origin is that it is certainly preventable and generally curable if taken early, whereas if left until grave pathologic changes in the articular tissues have occurred, treatment at the most can only relieve pain and prevent involvement of other joints.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HAMMOND AND HARTZELL

DR. J. W. COKENOWER, Des Moines, Ia.: In consideration of the fact that the oropharyngeal cavity is not much less than a septic tank for infection, it is not strange that we should look to this cavity for the source of many of the infections that we find in joint disease. Two years ago at Minneapolis before this section I read a paper on joint disease due to infection from other parts of the body, especially the tonsils and teeth, and since that time I have been making a tabulation of cases that have come under my observation, numbering forty-seven, and that involved not only the joints of the upper, but the joints of the lower extremities. In investigating their true etiology I found the percentage relation to the different parts by infection as follows:

Forty-four per cent. was traceable to the oropharyngeal cavity; only 8 per cent. to the thoracic cavity; 28 per cent. to the abdominal cavity, and 20 per cent. to the pelvis, and in each one of these cases treatment to remove the cause resulted entirely satisfactorily; hence I think that routine treatment of joint disease should be a thing of the past. It is not difficult to get satisfactory results if you ascertain definitely the etiology. These two papers, in my opinion, are valuable on a subject that has only in recent years been given especial attention. I believe that it will be given more attention in the future. I do not believe that any joint disease should be treated, unless the etiology is positive, without referring to the oropharyngeal cavity.

DR. EMIL S. GEIST, Minneapolis: We appreciate the necessity of having men who are not only tooth carpenters, but who are stomatologists, in order to take up this work successfully. As I emphasized once before, sometimes there is some tooth disturbance and a patient is sent to the dentist. He is quickly returned with his teeth pulled, or, there having been a little dental work done as a result of the reference, returned with the remark "that the teeth are all right now" and the real disease is often not recognized. In other words, we must have men of the type of Dr. Hartzell to cooperate with us in this work if we are to get results.

DR. HENRY W. FRAUENTHAL, New York: We have considered this work so important, at the Hospital for Deformities and Joint Diseases, that we uniformly examine the gums for pyorrhea infection, and also in a great many cases it is necessary to take roentgenograms of the mouth for these blind abscesses, and in doing so we have been greatly surprised by their frequency. It has become so important, I think, that it is only going to be a short time before dentists will not alone fill teeth, but will examine for blind abscesses. Also, a very important thing in filling teeth is that they must be *fully* filled to the tip of the root and not opened up for the infection of the roots.

DR. H. R. ALLEN, Indianapolis: As a factor of safety, our attention should be called to one point in tonsillectomy. Nose and throat men have two procedures: local anesthesia is one, and general anesthesia is the other. If you refer a child to a nose and throat man to have the tonsils removed and he uses a general anesthetic and allows one or both lungs to fill up with blood, you lose the child, and it puts a bad mark down both for the orthopedist and for the nose and throat man. I refer no case for tonsillectomy to a nose and throat man who uses general anesthesia unless he guarantees to me that the child's mouth and head will be held lower than the rest of the body. I feel rather emphatic on this point, because one year ago my right lung was filled and my left up half way, which only left the upper half of my left lung for breathing purposes. I feel very fortunate in being able to be here today, as I had a serious attack of pneumonia following my tonsillectomy. It is merely a matter of elevation. It is a simple mechanical fact that fluids will flow down hill. They will flow into the lungs if the lungs are down or they will flow out of the mouth if the head is low.

DR. M. C. HARDING, San Diego: I think we have all had the experience that Dr. Hammond speaks of — looking for the focus, then hoping or thinking we had found it and

cleared it up, but failing to get a recovery from the arthritis. I am sure that has been my experience. For a number of years past I have been making a routine examination of all of my patients so far as the teeth, nose and throat conditions are concerned, but I was impressed with this same point, that often I did not get results. While in the Orient I noted the fact that practically every patient had enlarged cervical glands. So the examination for enlarged cervical glands has also become a routine habit with me, one which I have carried out in this country, where a surprisingly large number have been found. It is a point which no doubt many of you have carried out, but if you have not you will be surprised at the number of enlarged glands you will find. Now the glands of the neck, as you of course know, are simply a continuation of the tissues of the tonsils and adenoids. The infection can remain there indefinitely, at some future time to crop out and give trouble.

DR. J. P. LORD, Omaha: I want to mention two points: One, that we cannot depend on the varying reports of the nose and throat men. They do not have the same conception of it as we do. I have had patients go through the hands of two or three of these men, with the specific recommendation that they determine the condition of the tonsils, and whether they required removal. After negative reports, the disease had continued, and having been backed up by an internist, who insisted the focus was there, the tonsils were removed on general principles. When that was done, the cases have been cured. Another instance: A case of mine gave me great trouble in its persistence, and the patient's parents were questioned repeatedly in regard to the thoroughness with which tonsillectomy had been done two years before. They said it had been done by a most capable specialist and it was impossible that anything could be there. But there was a fragment of tonsil and a focus there. We had it removed. The laboratory demonstrated the presence of the streptococcus. The patient got well. I do not take the testimony of anybody. See that any doubtful focus is removed, no matter where it is, even though you have to go to the appendix or gallbladder for it.

DR. THOMAS B. HARTZELL, Minneapolis: I should like to say that I do not advocate or wish to convey the idea that the dental path of infection is more than one element in this matter of arthritis, but slides which I have prepared show bacterial masses on the teeth, their port of entrance, and channels of distribution.

THE APPLICATION OF THE VARIOUS THEORIES IN THE MANAGEMENT OF PERITONITIS *

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In spite of nearly three decades of effort in the prophylaxis of peritonitis there are yet, even in cases that should be prevented, many examples of this disease that under any method of treatment still yield a very high mortality. While this has been greatly curtailed, and betterment in early recognition and efficient treatment is constant, there have been several additions to the plans of management which are worthy of consideration and application.

The beginning of the operative treatment of this disease yielded a frightful death rate, because we were as pioneers in its handling, and while our methods have been vastly enhanced in point of effectiveness, the disease is still as formidable as ever. At the Russian Congress of Surgeons in 1913 there was reported a mortality of 60.9 per cent. in 758 cases of the various forms of peritonitis. In cases occurring after forty-eight hours the death rate was 78 per cent. It is obvious that these statistics are appalling. Without any invidious criticism of our confrères, it is incontrovertible that in America we have nothing near so desperate a mortality, and yet our results are far from being ideal.

Next to the introduction of operative intervention for the elimination of the focus of peritoneal infection, the greatest adjunct in its treatment is the recognition of the forces at work in Nature's behalf and their conservation. It has been notorious that the most inopportune time for intervention is the period too late to anticipate the widespread invasion of the peritoneum and too early to allow for the benefits of the effort which Nature puts forth in her own behalf. The peritoneum is wonderfully efficient in protecting itself and destroying its invaders. The results of operation in the very early hours of the disease are most brilliant. Likewise in the terminal stages, as the result of the successful efforts at localization with the formation of localized abscess, the surgical task is greatly simplified and the results pleasing. In the interim when the battle wages, especially on the third, fourth and fifth days of the disease, our procedures are perilous, and herein lies the great difficulty of decision. The active group of surgeons immediately preceding our own time call attention to this fact. Cartledge in 1900 was among the first to draw attention to the undesirability of operating in peritonitis of appendiceal origin, in the third, fourth and fifth days, and yet operation was probably better than the purely nonoperative measures of that time.

It remained for Ochsner, with his searching inquiry and bold persistence, to point out a way by which these bad cases could be converted into safer risks. His methods are well known. In the beginning they were misunderstood by the medical man, who disregarded the first rule laid down by him, to operate in all cases of appendicitis in the first thirty-six hours when a competent surgeon was available. Moreover, his teachings at first were violently opposed by the surgical side, who realized the great need for therapy of some sort for the ravages of peritonitis. They were unmindful of the successful issue of many apparently very bad cases by Nature's efforts. We were constantly seeing walled-off abscesses in the peritoneum, which were uniformly evacuated with success, without taking into consideration how it was encompassed by Nature and how we might aid it. Ochsner taught us that absolute quietude of the patient, and inhibition of peristalsis was the desideratum. Nearly everybody learned the starvation feature but disregarded the underlying principles, and still persisted in the mischievous and often murderous efforts at purgation. At present, ten years after Ochsner's plan was given to us, it is a frequent and sad experience to see widely diffused peritonitis as the result of purgation plus delay. The latter is bad enough, but the lesser evil.

Ochsner says he has never seen a death from peritonitis (I presume he means of appendiceal origin) when no food or purgatives were given from the start. That ideal condition is rarely obtainable. Any practitioner, sufficiently versed in the pathology and needs

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of peritonitic cases, would recognize the wisdom of very early surgical relief. When neither are appreciated by him, the surgeon has to choose, on the one hand, between the late institution of the Ochsner plan, when the harm from the infraction of its three fundamentals, early operation, absence of food, and withholding purgation has actually accrued, and, on the other hand, the risk incurred by operation. With the perfected modern operation and the valuable postoperative auxiliary methods of after-treatment, most surgeons under these circumstances employ operative measures.

Thus in 516 cases of appendicitis, of all grades of severity, operated in the last four years, with 13 operative deaths, 2.5 per cent., I declined only 4 cases, too desperate for operation, which, added to the operative mortality, make 17 deaths, or 3.2 per cent.

Deaver[1] has lately shown the devastating effects of purgation. He asserts that purgation is more deadly than the scalpel, and analyzes seventy-nine cases with a history of purgation and found in all save two, at the time of operation for appendicitis, that the organ was either perforated, gangrenous, or surrounded by an abscess. Of seven deaths in his series, five patients had been purged, and of those who had been drastically purged, nearly all showed a very severe type of disease. The purge in peritonitis is the submarine to Nature's allies.

The value of gastric lavage, before and after operation in peritonitis, is incontrovertible. The removal of quantities of decomposed food, or even bile with the mysterious poison which seems to emanate from the duodenum, is very essential. In its employment, however, one should not neglect to cocainize the pharynx. This gastric lavage, if attended by great resistance, straining and vomiting, while intended to be beneficial, is about as harmful as food or purgation in causing movements of viscera and dissemination of the infecting material.

All surgeons are agreed that in the advanced cases of peritonitis, when the patient shows a clammy blue skin, extremely rapid pulse, low or subnormal temperature, with great distention, a motionless abdomen, low white cell count or leukopenia, that operation is practically useless. Patients in cases of less severity may recover with gentle and skilful interference. It is not to be denied, however, that interference at an inopportune time sometimes brings disaster, when the utilization of the Ochsner principles, plus deep morphinization, might have availed. It is a common experience with fifth and sixth day cases, before the complete walling off has taken place, that when infection is at its zenith and the resistance of the patient has not yet overcome it, particularly when the condition is very grave, operation in all probability would prove fatal, and yet with these rational measures improvement is manifest and in a few days the abscess becomes encapsulated and can be cured by simple incision and drainage.

Page,[2] in a thoughtful article with reference to the localized form of peritonitis, says it is very definitely shown that opening a local abscess and draining without crossing the peritoneum is attended with a considerable death rate. He has advanced the idea of simply opening the abdomen, and if the abscess is not adherent to the abdominal wall, but is still effectively walled off, not to interfere with the abscess at all. He simply inserts a medium-sized cigaret drain to the outer side of the abscess cavity, and says in a very considerable number the inflammatory swelling subsides without any pus appearing.

In the event the temperature does not subside and the pain continues, he removes the tube after a few days, and under gas inserts a finger along the tract of the drainage tube and breaks into the abscess and drains it. It is obvious that a badly situated abscess is thus rendered extraperitoneal in its evacuation. He has by this conservative method treated nineteen localized abscesses with absolutely no deaths, as contrasted to three deaths in twenty-five cases treated by the ordinary method at St. Thomas Hospital in London.

Contrasted to this plan, Knott[3] has urged the evacuation of all localized abscesses, after having sequestrated the outlying peritoneum, removing the appendix in every instance and draining the pelvis with gauze in a split rubber tube. He reports 501 cases with a mortality of 1.2 per cent. This practice has been employed more and more in this country, and is now almost the routine plan unless the localized abscess is ancient — 10 to 14 days — and adherent to the abdominal wall. In such cases I stop with evacuation and drainage, and do not search for the appendix.

In every case of peritonitis, whether localized or not, one should never fail to explore the pelvis with a long glass catheter as a capillary tube, a small sponge on holder, or a suprapubic incision if the original incision or focus has been in the upper abdomen. Often large quantities of more or less infected fluid will well up.

The knowledge of the danger zones in peritonitis, the greatest of which has been shown to be the upper abdomen and the least vulnerable the pelvis, led Fowler to suggest the upright position which has since caused his name to be associated with the great improvement in the treatment of this disease. Its wide adaptation has been one of the signal advances.

Murphy's addition to the principles of early operation, minimum interference (compatible with) rapid and efficient work, was the instillation of large quantities of salt solution through the rectum. It restores body fluids, dilutes toxins in the blood current, causes a great transudation of serum into the peritoneum, irrigates it with its bacterins, and helps manufacture lymph for trench warfare around the focus of infection. Its technic, however, while not in the purview of this paper, needs to be very actively gaged to insure results. As a maximum, 18 pints should be administered in twenty-four hours. When it is not retained, Murphy says it is the fault of the method of administration.

If it is necessary to obtain the anatomic and physiologic rest by withholding food, cathartics, gastric lavage and rectal infusion, was the old theory of Alonzo Clark — the use of large quantities of opium to absolutely inhibit peristalsis — so very erroneous? When the real pathology was uncovered surgically, this theory was thought to be exploded.

Recently Crile, in advancing the fascinating kinetic theory of peritonitis, has in effect drawn our attention to the very great value of deep morphinization to insulate the patient from the fatal dissipation of his energy in fighting his disease.

1. Deaver: Internat. Clin., iii, Series 22, p. 242.
2. Page: Brit. Med. Jour., Nov. 1, 1914.

2. Knott, Van Buren: The Removal of the Appendix in All Cases of Appendicitis with Localized Abscess, The Journal A. M. A., March 28, 1914, p. 1004.

He has shown that the lethal results of peritonitis are due to the great exhaustion with its destructive action on the great organs, that is, the brain, the liver and the adrenals. This results from the enforced transformation of potential into kinetic energy used in defense. All of the local and general symptoms are Nature's combative response to the infection. The pain compels the patient to assume a "box-like rigidity." The anorexia, vomiting and obstipation prevent ingestion and the dissemination of infection by peristalsis. The temperature burns up the protein compounds of infection. The distention of paresis, the exudation of lymph, the gluing of viscera together, are efforts at walling off infectious areas or products. All these symptoms, therefore, are really wonderful, automatic and often successful efforts at protection and self-cure, but they require great expenditures of kinetic energy. Can we protect the individual from this loss of energy while the "offensive movement" of phagocytosis continues? If the patient were asleep and oblivious to the conflict that was costing him nothing in the output of energy, he would be thus aided and abetted while his forces overcame the infection. This can be greatly promoted in the severest cases that cannot be handled in the usual way by keeping the individual deeply narcotized with morphin after operation. The respirations should be held down to 12 or 14 per minute. I have employed this method in addition to the usual plans after operation in three recent cases of general suppurative peritonitis with two recoveries, neither of which I believe would have resulted without the mental, physical and cellular immobility of the protective influence of deep narcotization.

The restoration of energy can be kept up by the introduction of large quantities of fluid, by the seeping method of Murphy. Plain water as advocated by Trout can be used or it can be impregnated with salt, glucose for nourishment, or sodium bicarbonate to antidote acidosis. By the anoci method Crile has been able to reduce his deaths to only two in 391 cases of acute appendicitis, with and without peritonitis, with the addition of narcotization in the very severe cases.

In general diffuse, suppurative peritonitis, the mortality under any method of treatment is staggering. It is not so much the impotence of our various plans of treatment, as the delay in employing them. Everything depends on promptitude. It is profitless to consider the cases of this class statistically as the time limit, virulence and extent of involvement vary so widely. One can never know whether the entire peritoneal membrane is implicated or not. If it is, and sufficient delay has occurred to bring this about, then an enormous death rate is inevitable under any and all known methods of treatment. All cases of peritonitis from perforation of stomach, duodenum, or other hollow viscera by gunshot or stab wounds, imperatively require operation within the first eight hours if possible. I have recently operated successfully at the end of eighteen hours, following a perforated duodenal ulcer, in a man of 56 who had been transported a considerable distance, but it is incontrovertible that the mortality rises with amazing rapidity with each hour intervening before operation.

The opportunities for the improvement in the results of peritonitis have never been more satisfactory. Early recognition of its causes is becoming more universal, although it may be admitted that whenever a case of advanced peritonitis, particularly from the appendix, has to be dealt with, it is proof of faulty management up to that time.

The most essential treatment, therefore, with or without operation, is an absolute prohibition of anything whatsoever by mouth, with immediate preparation for operative relief when possible. When for any reason this cannot be done the continuance of this principle with the addition of deep morphinization are the most dependable methods. After operation drainage by the glass tube suprapubically and the employment of the upright posture and proctoclysis is well nigh routine.

The various theories herein considered can be judicially employed for the varying manifestations of peritonitis, and by a judicious combination of the plans briefly referred to in this paper and the perfection of the technic of each, it is believed that the prevalence of peritonitis by surgical prophylaxis can be greatly reduced, and the percentage of cures when its progress has not been immediately prevented can be very appreciably augmented.

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ABSTRACT OF DISCUSSION

DR. WILLIAM B. BRINSMADE, Brooklyn: Let me call to mind the picture you have seen so often. A poor patient is seen, generally late at night; the lips are pale, the abdomen is distended, the pulse weak, the respiration labored; as you lift the covering the odor of flaxseed or turpentine, chloroform or some liniment greets your nostrils. As you put your hand on the abdomen, the patient flinches and perhaps brings up a few ounces of bile-stained fluid. Then comes the history of an acute onset—pain, vomiting, and gradually increasing constipation. The treatment has consisted of salts, castor oil, more salts, more oil, soapsuds enemas, turpentine enemas, alum enemas—and you are told that everything has been tried for three days and nothing has done any good, and therefore the salvage corps has been called on in the shape of a surgeon. Inquiry develops that the poor patient has had something done to her hourly, and has had no sleep for two or three days. Such a case demands an operation in the early stage; after forty-eight hours of a progressive invasion, operation is positively contraindicated. If there is a chance for the poor soul it lies in rest—rest for the stomach and bowels, rest for the body, rest for the brain, and this can be best attained by a large dose of morphin and gastric lavage. If the fates are with her, the patient may recover sufficiently to undergo the indicated surgical interference. If the surgeon operates, she will, in ninety-nine cases out of a hundred, pass on to the land from which there is no returning. Peritonitis is not a primary disease and of course should not be allowed to occur, but it does occur and always will. The time to operate and the method of operation are questions of the wisest judgment, which the surgeon is ever called on to exercise. If the patient can stand the burden of an operation, an incision over the original focus of disease with drainage, and an added suprapubic drain will fill the immediate requirements. Rectal and vaginal examinations will occasionally indicate the route for drainage of the pelvis.

DR. JOHN O. POLAK, Brooklyn: I desire to call attention to the importance of the application of part of Dr. Haggard's paper to the gynecologic and puerperal forms of peritonitis. If there is one class of peritoneal involvement that needs Ochsnerism, it is the class that follows the abortion or the exacerbated gonorrheal infection or a puerperal infection, for there is no class with which operative procedure is fraught with such mortality, morbidity and anatomic sacrifice. The principle which I lay down for the practitioner to follow is that where there is peritoneal irritation, particularly when there is a history of pelvic

origin, that case is not to be treated with salts and fed—but to have absolute starvation and morphin and the Fowler position, and I go further; I believe these pelvic cases do better if we omit the Murphy drip and use a 2 per cent. glucose solution by hypodermoclysis. We have carried these patients for many days. Serious distention, due to the paresis, will subside, the tongue be kept moist, and the vomiting cease. Lavage, morphin, hypodermoclysis, the Fowler position and leaving these patients alone is the general plan. When we operate, we operate for a definite pus formation. Where there is an exudate we wait and never operate until the case falls within the rule Simpson has laid down; i. e., the temperature has remained normal for a long time—he puts it three weeks in the classical cases—when the exudate has disappeared and the examination does not increase and cause an exacerbation of the temperature or exudate and when the leukocyte count has remained below eleven thousand.

DR. EDWARD REYNOLDS, Boston: I wish to speak of certain points in the technic of the operative management of the walled-off abdomen. Everyone agrees that when this class of abdomen can be gotten at through the vagina without opening uninfected peritoneum above, that is preferable. But when that is not possible one must open from above. First and foremost in importance is quick, brief, gentle operation. If one opens and finds that one is well away from the walled off part, instant, thorough wallingoff is required, and if one opens within the adhesions, walling off from the start with gauze, that at least no more peritoneum may be infected. When one gets down to the thickened adhesions behind which we know the pus lies, use a little fresh, separate gauze, before the finger goes through the adhesions and opens the actual pus cavity, that pus may be protected even from the walling off gauze. Follow by gentle evacuation, drainage, and the removing of the gauze in actual contact with the pus, without disturbing the walling off of the more distant peritoneum. I have had the greatest satisfaction since I have begun to sop out the infected area with sponges dripping with alcohol, cleansing the peritoneum as I would any other thing. Of course sop out the cavity, if it is possible, and then use iodin on the infected surfaces. The drainage should be placed in situ before the disinfection. The whole procedure should be completed as rapidly and gently as possible. I have had a better percentage of recovery since I began the fearless application of alcohol to the whole infected area and tincture of iodin to the actually traumatized area in those infected cases.

DR. J. B. DELEE, Chicago: Diagnosis is important. There is a distinct difference in the mortality of surgical peritonitis and obstetric peritonitis. Most cases of appendicitis get well without operation. Immediate drainage is not advised. The abscess should be allowed to form and can be opened later when the mortality is lower. On the other hand, puerperal peritonitis after a full term labor has a very high mortality and I was hoping that Dr. Haggard would present some successful method of treating these patients. I have tried all the methods that Dr. Haggard has so ably presented. The women die in spite of all you do in general puerperal peritonitis.

The borderline cases of peritonitis offer a better prognosis. After abortions and when the inflammation is limited to the pelvis, a more expectant plan of treatment is to be recommended. The Fowler position, the withholding of food for two or three days, large doses of opium—I prefer opium as it has a more sedative effect. When localization begins the longer the operation is postponed the better. As long as there is a continuous fever it is wise to keep out. There are cases in which an operation in the early stages of puerperal peritonitis may be indicated.

I would like to mention the facility with which the abdomen may be opened. You can turn the patient across the bed, insert a speculum and open the culdesac; a few injections of novocain around the cervix will make the operation as painless as the filling of a tooth. The abdomen may be opened very simply. The patient does not have to be taken out of bed; painting the skin with iodin, novocain is injected along the line of incision and in five or six minutes the operation is completed.

DR. H. O. PANTZER, Indianapolis: On opening the abdomen and finding free fluid, nonodorous, beside an abscess distinctly foul, I have learned such a condition to indicate a favorable prognosis. The observation first leading up to this was in a child 6 months old, with a general peritonitis in connection with a gangrenous appendicitis. The abdomen was full of purulent nonodorous fluid. The abscess contained about 45 c.c. of a thick, creamy, very foul pus. The child made an uneventful and speedy recovery. This observation was repeatedly verified in similar cases during the nine years since then, and I have come to regard this sign as of real prognostic value. One point in regard to therapy. Given a case which is drifting rapidly toward death, as indicated by dryness of skin, foulness and dryness of tongue, coma, etc., and which indicates in itself a toxemia which the glands can no longer cope with, here large doses of sodium salicylate—30 or even 60 grains at a dose—are of eminent usefulness. Given by rectum, with one pint of water and a few drops of camphor every four hours, this medication will often do wonders.

POSTMORTEM REFLEXES

JOSEPH H. CATTON, M.D.
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Examinations of certain of the tendon and superficial reflexes were made on the bodies of fifteen persons, dead from various causes, in the wards of the San Francisco Hospital. Observations began immediately after death and continued for from forty to sixty minutes.

LIST OF PERSONS EXAMINED

Name	Age	Date of Death	Cause of Death
S. D.	42	2/15/14	Lobar pneumonia
D. R.	60	10/24/13	Lobar pneumonia
G. B.	46	4/ 9/14	Bronchopneumonia
F. M.	65	11/14/13	Rectal carcinoma
F. C.	34	10/28/13	Pneumococcic meningitis
C. A.	93	10/23/13	Cerebral hemorrhage
D. J.	40	10/28/13	Acute dilatation of stomach
J. N.	54	10/16/13	Bronchopneumonia
L. B.	69	10/18/13	Cerebrospinal syphilis
O. W.	50	10/27/13	Chronic diffuse nephritis
W. H.	50	11/ 1/13	Pyemia
T. R.	62	11/16/13	Bronchopneumonia
W. R.	46	2/11/14	Chronic parenchymatous nephritis
E. D.	54	10/24/13	Lobar pneumonia
S. H.	27	2/13/14	Cerebrospinal meningitis

OBSERVATIONS

1. From the moment following death and during the entire period of examinations, no true deep reflexes were obtained on tapping the biceps, triceps, patellar or Achilles tendons in the proper manner.

2. No true skin reflexes were obtained on attempting to elicit abdominal, cremasteric or plantar reflexes in the usual way, nor were there observed in any case a Babinski or Oppenheim.

3. A response simulating a deep reflex was obtained persistently if a tendon, as the Achilles or biceps, was tapped high enough to include even a small amount of muscle.

4. A response simulating a true plantar reflex was obtained if a hammer handle or key was pressed deeply into the sole as it was drawn along.

5. The slightest tap on a muscle belly caused it to contract, and this response was progressively more marked as time passed till a certain maximum was reached; then it became gradually less marked and had disappeared at the end of about sixty minutes.

6. A short quick tap caused a localized contraction of a few muscle fiber bundles, raising a definite nodule about the size of a pecan nut. The latter gradually receded. This phenomenon was independent of the general tendency toward muscular contraction mentioned above.

7. Muscular contractions were obtained on tapping numerous places about the wrist in an attempt to elicit the periosteal reflexes. There was, however, in all cases muscle tissue beneath the part tapped.

8. These findings were present in all the cases.

CONCLUSIONS

1. The tendon and superficial reflexes disappear at death.

2. Muscular irritability, that is, to mechanical stimulation, is increased immediately following death, continues to increase to a maximum and then to decrease, disappearing at about sixty minutes post mortem.

3. Since similar increase in muscular irritability is observed in certain organic diseases of the nervous system, these reflex studies and similar studies of the electrical reactions of muscle and nerve following death should lead to new aids in the diagnosis of nervous disease.

4. In eliciting tendon reflexes, one must be careful that he taps only muscle-free tendon.

5. The instrument must be made to stroke and not dig into the sole in eliciting the plantar reflex.

6. The persistence post mortem of many reflexes about the wrist warns us not to confuse them with the periosteal reflexes in life.

209 Post Street.

THE ELIMINATION OF POTASSIUM IODID IN THE URINE

AN EXPERIMENTAL COMPARATIVE STUDY OF ITS ADMINISTRATION BY MOUTH OR RECTUM *

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This work was entirely confined to the study of the urinary elimination of potassium iodid after oral or rectal administration. The patients of the general ward type were given 1 gram of potassium iodid and the urine was subsequently examined to determine the total amount of potassium iodid excreted day after day, until the last traces had disappeared. For comparison, whenever possible, the same patient was given a similar quantity of potassium iodid per rectum (by proctoclysis) and the urine was treated in the same

* From the Chemical Department of the Pathological Laboratory of the Lebanon Hospital.

TABLE OF RESULTS OF DETERMINATION OF POTASSIUM IODID ELIMINATION IN URINE *

Name	Clinical Diagnosis	Blood Pressure		1 gm. of Potassium Iodid given by					
				Mouth			Rectum		
				Day			Day		
		Mm.	Hg.	1st	2d	3d	1st	2d	3d
A. E.	Cardio-nephritic	S.	200	0.25	0.01	—	0.32	0.1	—
		D.	50						
L. C.	Influenza	S.	115	0.51	0.1	Trace	0.3	0.05	—
		D.	80						
H. R.	Emphysema	S.	160	0.4	—	—	0.6	0.06	Trace
		D.	75						
Ch. G.	Bronchial asthma	S.	120	0.32	0.01	—	0.52	0.08	Trace
		D.	90						
A. H.	Rheumatic endocarditis.	S.	125	0.5	0.15	—	0.65	0.02	—
		D.	80						
A. K.	Carcinoma of intestines	.....		Not given	Not given	....	0.75	0.15	—
Ch. E.	Typhoid abscess of lung	S.	130	0.29	0.01	—	0.45	0.1	—
		D.	80						
M. A.	Peliosis rheumatica	S.	120	0.75	—	—	Not given	Not given	..
I. S.	Nephritis	S.	180	0.3	0.03	—	0.28	0.08	—
		D.	80						
M. A.	Nephritis	S.	145	0.2	—	—	0.32	0.06	—
		D.	80						
I. W.	Nephritis	S.	165	0.39	0.01	—	0.45	0.06	Trace
		D.	85						
R.	Nephritis	S.	155	0.18	0.04	—	Not retained	Not retained	..
		D.	95						
I. Sh.	Uremia	S.	260	0.1	—	—	0.24	0.1	—
		D.	155						
M. W.	Uremia	S.	185	0.2	—	—	0.35	0.06	—
		D.	95						
M. K.	Nephritis	S.	160	0.09	—	—	0.28	Trace	—
		D.	90						
S. S.	Acute nephritis	S.	120	0.36	0.15	—	Not retained	Not retained	..
		D.	85						
G. B.	Arteriosclerosis	S.	145	0.35	0.02	—	0.45	0.06	—
		D.	85						
S. R.	Rheumatic endocarditis.	.....		0.65	0.09	—	Not retained	Not retained	..
A. P.	Pneumonia	S.	130	0.5	—	—	Not given	Not given	..
		D.	80						
A. N.	Pneumonia	S.	140	0.32	—	—	Not given	Not given	..
		D.	95						
A. B.	Pneumonia	S.	135	0.3	—	—	Not given	Not given	..
		D.	90						
G. G.	Pneumonia	S.	130	0.42	—	—	Not given	Not given	..
		D.	90						
A. F.	Influenza	.....		0.52	0.04	—	0.48	0.09	—
B. F.	Auricular fibrillation of heart	.....		0.5	0.2	—	0.42	0.08	Trace

* Twenty-four hour specimens of urine were used.

manner as before. It is not the intention of this paper to discuss the action, uses and polytherapy of iodids in medicine.

The technic employed for the quantitative analysis was the following:

1. A fiftieth normal solution of sodium thiosulphate ($Na_2S_2O_3$) was prepared and carefully standardized against a definite quantity of potassium iodid. The standardization was performed as follows:

An exact 10 per cent. solution of potassium iodid is used. One c.c. of this 10 per cent. solution is diluted up to 100 c.c. with distilled water and introduced into a separating funnel. To this is added 5 c.c. of a mixture composed of strong nitric acid plus 5 per cent. of nitrous acid, and well shaken. Allow to stand five minutes and then add 10 c.c. of chloroform. Agitate well to wash out the liberated iodin. Let stand for five or ten minutes and drain off the purple colored chloroform from the bottom of the separating funnel into a beaker. The iodin extraction is continued and repeated with several fresh, smaller portions of chloroform and the whole of the chloroform used for the washing is collected in the same beaker. The washings should be continued until the returning chloroform is colorless.

2. Next carefully titrate the chloroform-iodin contents with the fiftieth normal sodium thiosulphate solution until the purple chloroform becomes completely colorless. Having thus determined the amount of sodium thiosulphate solution necessary to decolorize the iodin of 1 decigram of potassium iodid, calculate its equivalent for 1 c.c. of $Na_2S_2O_3$ $\frac{\text{N.}}{50}$ and use the obtained figure as the standard.

For the urine determination, 100 c.c. of a twenty-four-hour specimen of urine is used and treated exactly as described above in the standardization. Having determined the potassium iodid elimination per 100 c.c. of urine, calculate therefrom the total excretion in the twenty-four-hour specimen.

REMARKS

It is to be noted that the major portion of the eliminated potassium iodid is excreted in the first twenty-four hours, from 5 to 10 per cent. is given off in the second twenty-four hours and by the third day only a trace or no potassium iodid is excreted.

As is to be expected, the amount of potassium iodid recovered never equaled or even approximated the amount introduced, indicating that other avenues of elimination (skin, saliva, etc.) excreted a considerable portion, and perhaps part may be utilized in thyroid-protein moleculization.

Patients who spit up a great deal excreted less potassium iodid in the urine.

The total elimination of potassium iodid in nephritic cases, as compared with other diseases in the chart, is the lowest and serves as a hint of poor renal function.

When the potassium iodid was given per rectum in the nephritic cases there was a more notable elimination, due probably to slower absorption and the proctoclysis acting as a renal stimulus.

Observe the peculiarity of the four pneumonia cases in excreting in the first day all excretable potassium iodid with no traces on subsequent days. Possibly this fact bears some relation to the low total chlorin elimination in pneumonia, as both are halogens.

The blood pressure seemingly has no material relation to the excretion index.

Potassium iodid can be given by rectum to comatose patients with the same result as when given by mouth (Patient A. E. being in coma when brought to the hospital, later regaining consciousness).

On the same case a lumbar puncture was made and a trace of potassium iodid was found in the spinal fluid. In two other instances, however, no potassium iodid could be discovered in the spinal fluid.

Whether those that excrete little through the urine are the ones that suffer from toxic and skin symptoms could not be ascertained, as experiments on the same patients were limited. Some patients could not retain proctoclysis and therefore only mouth determinations were possible.

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QUININ AND UREA INJECTIONS IN HYPERTHYROIDISM

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Since my preliminary report,[1] I have used quinin and urea injections over two hundred times in fifty cases of goiter, with no unpleasant effects.

I recommend the method only to relieve hyperthyroidism and not to remove the goiter. It is often true that in small toxic and atoxic goiter the inflammatory reaction following the injection is sufficient to cause the disappearance of the tumor; but the process is slow, usually covering several months, and when used for this purpose alone, the results are liable to be disappointing.

The injection must be employed with discretion; I have used it two years; the length of time being too short, and the number of cases too limited to draw final conclusions. It is suitable for use only in a hospital by men skilled in goiter work. One inexperienced is liable to inject too deeply, or to make the injection within the trachea. The indiscriminate use of quinin and urea, in the hands of one not familiar with the low threshold to stimuli possessed by the average case of toxic goiter, is liable to produce alarming symptoms of hyperthyroidism which might result disastrously.

In all cases of hyperthyroidism, I have obtained the best results by keeping the patient in bed in a hospital several weeks while giving the injections, the length of time depending on the severity of the symptoms and response to treatment.

PRELIMINARY TREATMENT

The necessity of minimizing pain from any injection by the use of local anesthesia cannot be too strongly emphasized.

To raise the patient's threshold to stimuli, thereby preventing an acute attack of hyperthyroidism which might otherwise follow the slight pain of the first quinin and urea infiltration, all cases of toxic goiter receive at one to three day intervals, preliminary injections into the most prominent portion of the goiter, of a few minims of sterile salt solution followed by injections of sterile water.

After two to four preliminary injections, the nervous reaction is so diminished that the quinin and urea can be given with only slight discomfort and no increase in symptoms; as soon as there is no hyperthyroidal reaction following the water injections, their usefulness is at an end.

I have observed in giving these injections that if the same point is always used, the reaction is less

1. Watson, L. F.: Quinin and Urea Hydrochlorid Injections in Hyperthyroidism, THE JOURNAL A. M. A., Jan. 10, 1914, p. 126.

than if each is given at a different place. For this reason I give the preliminary injections and the first quinin and urea infiltration at the same site.

TECHNIC

A study of thyroids removed after infiltration has demonstrated the difficulty of destroying even a small portion of the gland by injections through the skin. As one becomes experienced in the technic, it is possible to give each injection into tissue that has not been previously infiltrated; thus destroying the greatest amount of thyroid with the smallest number of injections.

For the injection I use an all glass syringe of 1 or 2 c.c. capacity, fitted with a slip needle so that the syringe can be readily attached and detached without traumatizing the thyroid. I prefer a fine platinum needle 1½ inches long.

After the usual aseptic precautions, the site of the injection is anesthetized with a 0.1 per cent. cocain or 0.25 per cent. novocain solution infiltrated into the skin, subcutaneous tissues and muscles, down to the gland. The syringe is now detached and the needle is thrust carefully into the body of the goiter. After ascertaining that there is no fluid in the thyroid and that no blood or air comes through the needle, the syringe is attached and the infiltration slowly made.

In cases of hyperthyroidism, I usually give from 1 to 4 c.c. of a from 30 to 50 per cent. quinin and urea solution at a treatment, repeating the injections about every third day, depending on the progress of the patient. Eight to fifteen infiltrations are usually necessary to produce a marked improvement in the general symptoms and the disappearance of the bruit over the superior thyroid arteries.

In cases of recent cystic goiter with moderate symptoms of hyperthyroidism, I aspirate the fluid and make one to three injections. Although the action of quinin and urea on the cystic type is uncertain, in the five cases I treated early in 1914, the tumor has disappeared and has not recurred.

EXPERIMENTAL RESULTS

The report of two severe toxic goiters removed after injection may be of interest:

CASE 1.—Six months after the usual injections through the skin, one case of toxic goiter was not relieved of hyperthyroidism, although the tumor was reduced one half. A partial thyroidectomy disclosed only isolated areas of necrosis—thus demonstrating that I had failed to destroy a sufficient amount of thyroid tissue to relieve the symptoms.

CASE 2.—A vascular goiter was exposed as for operation and one half of the gland thoroughly injected. Prompt relief from hyperthyroidism followed this extensive infiltration. Three weeks later, for cosmetic reasons, a partial thyroidectomy was done, revealing a complete necrosis of the injected area.

In each of these cases there was a noticeable absence of adhesions around the gland; the operation was not made more difficult because of the previous treatment.

The injection of weak quinin and urea solutions into thyroid tissue is productive of only a temporary fibrinous exudate which is rapidly absorbed with more or less accompanying hyperemia; the reaction following the strong injections is more intense and results in extensive inflammation with round-cell infiltration, connective-tissue proliferation and necrosis of the thyroid cells with a loss of staining properties of colloid and thyroid.

CLINICAL RESULTS

Sixteen patients with recent toxic goiter, treated before June 1, 1914, have been free from symptoms of hyperthyroidism for one year. In four of these patients, the goiter has entirely disappeared; in eight, the gland has perceptibly decreased in size; in two, the thyroid has slightly enlarged; and in two others there has been no appreciable change in the size of the tumor. Two patients with severe toxic goiter are free from symptoms of hyperthyroidism eighteen months after the last injection. Ten of these patients, who were emaciated at beginning of treatment, have shown a marked increase in weight, some gaining as much as 40 pounds during the treatment and the four months following; and so far as I can learn at this time none have lost the weight they gained.

Late in 1913, two injections were given in each of three cases of toxic goiter. The first patient was free from hyperthyroidism for seven weeks; the second was relieved for two weeks; both of these patients later went from under my care and had a partial thyroidectomy. The third patient, who had hysteria complicating hyperthyroidism, was relieved for two months; when the symptoms recurred she refused further treatment, and I am informed that now, a year since I saw her, she is improving at home without any treatment whatever.

Nine cases of recent atoxic (simple) goiter treated before June 1, 1914, are under observation. In two of these cases the goiter is undiminished in size; in three, it has entirely disappeared; and in four, it is slowly diminishing.

Twenty-five cases of toxic and atoxic goiter which have been under observation since June 1, 1914, will be the subject of a future report.

CONCLUSIONS

1. The study of the quinin and urea treatment is based on fifty cases of goiter in which I have used the injection more than two hundred times with no unpleasant effects. The method is recommended only to control the symptoms of hyperthyroidism in cases of toxic goiter, and is not recommended to remove the tumor in atoxic (simple) goiter for cosmetic reasons alone.

2. The injection will not relieve the symptoms of advanced toxic goiter when the vascular and nervous systems have been permanently damaged.

3. In summarizing, I believe the following observations may be ventured: Much depends on a proper selection of cases; the necessity of preventing pain from any injection, by the use of local anesthesia, is of vital importance; if acute attacks of hyperthyroidism are to be prevented, the use of preliminary injections into the most prominent portion of the goiter, of a few minims of sterile salt solution given at one to three day intervals, followed by injections of sterile water, will be found indispensable; the result of the quinin and urea injection depends on the amount of tissue destroyed.

4. The quinin and urea injection in experienced hands is a harmless procedure; it is almost painless, and there is no postinjection discomfort. It is suitable for use only in a hospital by men skilled in goiter work.

5. The gradual improvement of the exophthalmos in certain patients following the quinin and urea treatment points to a nerve control exerted by the thyroid

on the exophthalmos, through the sympathetic nervous system, as first suggested by Landström.[2]

6. I believe the greatest field of usefulness for the injection will be found in those cases of beginning hyperthyroidism not severe enough to justify operative treatment, and as a preparatory measure to partial thyroidectomy in chronic cases of toxic goiter in which the patient is too ill to warrant any form of immediate operative procedure.

THE PRACTICAL USE OF COPPER SULPHATE IN SWIMMING POOLS

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Since the publication of a paper on "The Use of Copper Sulphate in the Purification of Swimming Pools" in the *Journal of Industrial and Engineering Chemistry*,[3] and the editorial comment in THE JOURNAL,[4] I have received many inquiries from physicians who are interested in the practical side of this subject. As the first paper was primarily an attempt to show, by scientific reasoning and fact, the advantages of copper sulphate as a disinfectant in pools, no attempt was made to describe the actual method of using it, that is, the method of charging the water, the amount of disinfectant to use, frequency of application, and practical workings of the system. In this paper an attempt will be made to give minute directions for the use of copper sulphate by a person in charge of a pool.

Of course it must be understood that no means of purification is of itself sufficient when the ordinary laws of sanitation are not obeyed. Moreover, the efficacy of a disinfectant depends to a greater or less degree on the chemical contents of the water used in the pool, and no definite amount of the disinfectant can be recommended with the statement, "This will make your pool water pure." If possible, frequent bacteriologic analyses should be made, at least during the first week or two of the treatment. This will show better than any other means whether or not the proper amount of the disinfectant is being used.

The first requisite in the sanitary management of a swimming pool is the proper cleansing of the bathers before they enter the pool. A thorough shower bath with warm water and soap should always precede the plunge. When it is possible, as in the case of Y. M. C. A., school or college pools, no clothing whatever should be allowed. In the case of public pools, girls' pools, Y. W. C. A. pools, etc., in which this provision cannot be carried out, bathing suits of light colored materials should be insisted on, and these should be washed in disinfecting solutions at frequent intervals. Lastly, and this is of prime importance, no person should be allowed in the pool who knowingly is suffering from a communicable disease. This means that a physician should have at least a general supervision over every swimming pool.

That these general precautions, however, do not destroy the danger of transmitting disease through the medium of the pool water is fully realized by sanitarians. Within the last two or three years especially, this fact has received universal attention by hygienists throughout this country and Europe. Various means of purifying pool water have been proposed. We have seen pools designed with traveling buffers to force out the dirty water for subsequent treatment. Many pools in cities in which water rates are high use refiltering systems, of which there are many excellent types on the market. Ozonation and purification by means of ultraviolet light are receiving commercial attention. Recently the use of bleaching powder or calcium hypochlorite has been advocated. All of these methods insure pure water entering the pool, but they fail in what must be considered the most important particular—they cannot keep the water pure after bathers have been in the pool.

Consider these figures as an example of "before and after using" a swimming tank: On analysis, the pool water in the Taylor Gymnasium at Lehigh University was shown to contain, just after filtration and before any one entered the pool, 10 bacteria per cubic centimeter, and no colon bacilli; after forty men had been in the pool, although all the preliminary sanitary precautions had been taken, the water contained 5,300 bacteria per cubic centimeter, 200 of which were colon bacilli. Bleaching powder introduced into the pool in germicidal quantities is out of the question on account of its disagreeable odor and its irritating effect on the eyes and mucous membrane. Copper sulphate can be used in germicidal quantities without any disagreeable results.

The method of using copper sulphate is very simple. I found as the results of experiments that about one-twentieth (0.04) part of copper sulphate to a million parts of water, used every day, kept the water pure. As stated before, this amount cannot be recommended absolutely for every pool. The chemical contents of the fresh water, the number of bathers, the frequency of refiltration, etc., are factors that should not be overlooked. However, for most pools averaging not more than from 100 to 150 bathers per day, and in which the proper care is taken, this amount will prove the proper one.

In order to determine in pounds the amount of copper sulphate to add, the capacity of the pool must first be determined. In the case in which this is known as a certain number of gallons, the problem simply amounts to multiplying the number of gallons capacity by 8.3 (the weight in pounds of a gallon of water), and dividing the weight of the water thus determined by 2,000,000 (the solution being one-half part per million). The result is the weight in pounds of copper sulphate to be added. For example, suppose the pool contains 90,000 gallons of water:

$$\frac{90{,}000 \times 8.3}{2{,}000{,}000} = 0.37 \text{ pounds, or about 6 ounces, of copper sulphate to be used.}$$

In case the capacity of the pool is not known, it may be determined as follows: Multiply the length in feet by the width in feet, and the result by the average depth in feet. This will give the capacity of the tank in cubic feet. As a cubic foot of water weighs 62.5 pounds, we now have the formula:

$$\frac{\text{length} \times \text{width} \times \text{average depth} \times 62.5}{2{,}000{,}000} = \text{weight of copper sulphate to be used}$$

The copper sulphate should be added daily. The method of introduction consists simply in dissolving the required amount, placed in a small bag, such as a 5-cent salt sack, directly in the pool, either by dragging the bag through the pool by means of a pole, or by throwing it into the pool as an object for the bathers

2. Landström: Ueber Morbus Basedowii, 1907.
3. Thomas, S. J.: The Use of Copper Sulphate in the Purification of Swimming Pools, Jour. Indust. and Eng. Chem., 1915, vii, 496.
4. The Practical Disinfection of Swimming Pools, Current Comment, THE JOURNAL A. M. A., July 10, 1915, p. 176.

to dive for. Another very easy way is to dissolve the disinfectant in a quart or two of water and pour this solution into the pool. No more than enough solution for one treatment should be prepared at one time if it is used in this way. The swimmers soon distribute the dissolved salt throughout the pool.

As to the time of treatment, it is best to use copper sulphate between the two most popular times for the pool, such as at noon if there are large morning and afternoon classes, and at supper time if there are large afternoon and evening classes. To use any disinfectant just before or just after adding a large amount of fresh water is, of course, simply a waste.

Copper sulphate may be obtained at the present time under the commercial name of blue vitriol for about $7 per hundred pounds. One hundred pounds will last the average pool about a year.

RUPTURED ANEURYSM OF THE RIGHT VERTEBRAL ARTERY *

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The patient, an unmarried white man, aged 40, was admitted to the University Hospital, Nov. 24, 1914. He had joined a ship's crew only four days previously and earlier history than this, therefore, could not be expected. On the day of admission he had been ashore, returning in perfect health, for he was afterwards observed reading in his bunk. At 8:30 p. m. he was seized with chills and sweats, receiving 5 grains of quinin therefor. Half an hour later he was unconscious. His companions said he had fainted. On recovery he complained of headache and pain in the back of the neck. He walked unsteadily to the ambulance and was received in the hospital in a state of forgetfulness, constantly asking where he was, but remembering only a few minutes. In a few minutes he became restless, surly, and so violent as to require mechanical restraint. In four hours he was irrational, became rigid and developed opisthotonos for several minutes, followed by profuse sweating. During this time he was unconscious. Respirations were of Cheyne-Stokes type. The extremities were not rigid. Temperature 98.4, pulse 64, respiration 24. The pulses were strong, equal and of good volume. The sclerae were muddy, and the eyes turned to the left when not moving. Accommodation reflexes were indeterminable. He frequently yawned. The abdominal muscles were tense, but without trismus. Taches cérébrales developed slowly and were indistinct. Reflexes were normal, Kernig's sign mildly positive.

On the day after admission spinal fluid was withdrawn and found to consist of almost pure blood. No organisms were found. The leukocyte percentage was lower than that of his blood. Blood examination showed: red blood cells, 3,870,000; white blood cells, 22,400, hemoglobin, 68 per cent. Differential count of leukocytes, polymorphonuclears, 87; lymphocytes, 10; large mononuclears, 1; transitionals, 2; eosinophils, 0. He vomited much brownish fluid in the morning. The urinalysis showed a trace of albumin, and that acetone was present, but no diacetic acid.

Two days after admission, he became rational at times, and stated that he drank considerable whisky on the day before his attack. He was somnolent and irritable when awake. On the third day an eye examination (left) showed shoked disk and numerous hemorrhages. Pupils were contracted, limiting the examination. A second spinal puncture furnished, again, almost pure blood. The patient always laid on his left side.

On the fourth day a Wassermann reaction from the spinal fluid was reported positive. The urine was reported + for acetone and a trace of sugar by fermentation test.

On the fifth day he was seized with sudden tetanic convulsions, became rigid, developed opisthotonos and shortly died by respiratory failure. The heart beat for a long time after respirations ceased.

The temperature chart showed an imperfect daily rhythm, rising to about 100 between 6 and 9 p. m. and falling to normal or subnormal in the mornings. The temperature rose to 101 at death.

In short, the history describes an apparently perfectly healthy man, at rest and in the prime of life, suddenly seized with headache, chills, and in half an hour unconsciousness; with partial recovery of consciousness in a short time, quickly succeeded by return of unconsciousness, and in four hours irrationality, violence, rigidity, opisthotonos, sweating; in twenty-four hours or thereabouts recovery of consciousness and somnolence persisting for three or four days, and then dissolution by respiratory failure with convulsions and rigidity.

At necropsy (U. P. 4621, 1914, 142) the scalp and calvarium were found quite normal, the dura mater of normal thickness and without pathologic features. The cerebral vessels, especially those in the occipital region were markedly congested and the fluid of the pia arachnoid here had a red tinge. The cisterna magna and medullary meninges were highly infiltrated with fresh, soft, black clot which embedded and concealed the nerve roots and cord. When the brain was removed the hemorrhage was found to be most marked in the basal region, extending anteriorly as far as the optic chiasm. The clot was most abundant at the bulbopontine junction, and here the right vertebral artery was found divided at the middle of a pea-sized expansion. This lay 10 mm. below the beginning of the basilar artery. It was the dorsal (posterior) wall of the artery which was most markedly dilated, the aneurysm belonging to the saccular variety. It lay against the bulb, about 10 mm. below the bulbopontine junction and extended into the angle between the right cerebellar lobe and the bulb. It did not impress the latter. The inferior half of the aneurysm was almost filled by a laminated thrombus which was pierced ventrally by a blood channel about 1.5 mm. in diameter in which the blood had evidently been circulating. The rupture appears to have occurred anteriorly (confirmed microscopically) at about the middle of the aneurysm, at the point of emergence of the posterior inferior cerebellar artery.

The internal carotid arteries were distinctly sclerosed, but the other members of Willis' circle were only slightly so. The basilar and vertebral arteries showed no sclerosis. Microscopic sections of the latter arteries showed early intimal degeneration and slight medial fibrosis best marked at the point of emergence of a small branch. No additional aneurysms, miliary or otherwise, were found in any of the intracranial arteries. The aorta was very elastic and showed slight superficial atheroma. Other organs showed no notable fibroses or other stigmata of syphilis.

A microscopic section was cut transversely from the ragged upper surface of the lower half of the broken aneurysm, lying therefore, at about its middle. The histologic report follows:

On one side the muscular coat is recognizable as such, vital and divided into three segments by blood extravasations and by a gap. On the other side the wall is highly attenuated, markedly bulged outward and encloses a thrombus. The latter does not completely fill the vessel, a broad lumen persisting close to the vital side and communicating with the exterior of the vessel by means of the gap mentioned above. The attenuated aneurysmal side of the vessel constitutes fully four fifths of the circumference. Here the different coats are fused, not recognizable as individuals, hyaline, necrotic, but nowhere ruptured. There are no attempts at organization of the overlying thrombus, which is of very recent type. In the periphery of the thrombus the outlines of the red blood cells are more or less preserved and leukocytes are in fairly vital condition, while the luminal part is very recent, showing fibrin reticulum and cellular elements in excellent condition. The point at which the dilatation begins

* From McManes Laboratory of Pathology, University of Pennsylvania.

is sharply indicated, and here, on either side, the thrombus extends between and separates the media and adventitia, continuing on one side as a narrow zone quite as far as the gap. This gives the appearance that the adventitia really constitutes the wall of the artery and that the intima and media (of the vital part) project their unattached extremities into the thrombus, the necrotic adventitia extending around the whole vessel, only interrupted at the gap. On the vital side the media is divided into three segments by hemorrhages which show laked red blood cells and hemosiderin granules. Over the segments the elastica is corrugated, over the defects serpentine or straight, save at the gap, where it is broken. This gap is directly opposite the aneurysmal dilatation. The intima immediately adjacent is cloddy, granular and discontinuous, underlaid by laked red blood cells and no media. It is overlaid by a thin layer of ropy, hyaline, necrotic material suggesting old thrombus. There is no histologic evidence of specific causation.

Sections from the basilar and cerebral arteries at times show a mild proliferative endarteritis.

The foregoing findings apparently indicate an unusual mechanism of rupture, for which reason they have been made the subject of a separate communication.

A review of the literature shows that aneurysms of the vertebral artery in its intracranial course are distinctly rare. In 1866 Lebert[1] wrote an article on numerous intracranial aneurysms wherein he cites most briefly two cases which occurred in the vertebral artery. Of these, the first was reported by Cruveilhier[2] in 1835, and occurred in a man, aged 60, who showed several aortic aneurysms, one on the mesenteric artery and one on the right vertebral. The pons was deeply depressed and blood pigmented. The second citation was that of Hodgson[3] who found a distinct widening of both vertebrals before they joined the basilar.

In 1894 von Hofman[4] published an exhaustive analysis of 75 cerebral aneurysms of which 10 occurred in the vertebral. All of these cases were his personal observations extending over twenty years, during which time he had especially examined all cases available of sudden death with cerebral symptoms. All ten of his vertebral aneurysms had ruptured and death had taken place by intrameningeal hemorrhage. This high percentage of rupture is doubtless explained by his selection of patients who died suddenly. His largest specimen measured 2.5 by 1.3 cm. The smallest was of the size of a tare. He did not give the clinical history of all his cases.

In 1906 Ruston and Southard[5] reported a case of miliary cerebral and gross vertebral aneurysms in which they emphasize suboccipital pain as an important clinical feature. The subject, a woman aged 69, had been drowsy for about a year. The attack was sudden, severe and initiated by boring, suboccipital, strictly localized pain and projectile vomiting. During the first five days there were slight chills and sweating. On the eighth day a second attack occurred followed by improvement up to the nineteenth day, when death occurred suddenly. At necropsy both vertebrals were aneurysmal, fusiform, 0.75 cm. in diameter and not ruptured. These writers cite cases among which is one by Ladame and Monakow, in 1900.[6] The lesion here was the size of a pigeon's egg and had produced degenerations of pons, cerebellum, olive, pyramid and left acoustic nerve. The left fifth, sixth, ninth and tenth nerves were slightly atrophied. The patient had symptoms of cerebellar type for two years before death. A second case cited by the same authors was reported by Rindfleisch.[7] A woman, aged 51, had had headache and eructations for three years. Sudden suboccipital pain and eructations occurred six days before death. She became comatose in three days. Death took place by respiratory failure. The aneurysm was the size of a bean and had ruptured.

In 1907, Beadles[8] investigated 555 cases of intracranial aneurysms which had been proved by necropsy. Of these he mentioned but three as occurring in the vertebral artery and did not refer to the cases of Lebert, von Hofman and Ruston and Southard. Of these three his one personal observation was on an aneurysm of the size of a pea at the junction of the left vertebral and inferior cerebellar arteries which compressed the roots of the seventh, eighth, ninth (?) and twelfth nerves. The pyramid and olive of the same side were atrophied. His figure shows it as a shallow pouch from whose fundus the inferior cerebellar artery is emerging. His second case is a citation of Schulze.[9] This was a saccular aneurysm of the left vertebral. The patient had spasm of all the muscles of the left side of the face except the frontalis. Beadle's third refers to Moser's[10] case. Symptoms of a bulbar lesion had existed for a considerable period of time; and a loud murmur was heard on each side between the mastoid and vertebral column. At necropsy the left vertebral artery showed fusiform dilatation, measuring 12 mm. in width and 20 mm. in length. The basilar was also strikingly wide. The olivary body and restiform body were flattened or diminished, and foci of softening were found in the corpus striatum and optic thalamus.

Since Beadles' paper but seven vertebral aneurysms are indexed, and of these none had ruptured.

Boinet's[11] specimen lay on the left side, 5 mm. below the basilar artery and measured 30 by 15 mm. Many gummas were present on the surface of the brain and in the substance of the nervous centers. The clinical history is so brief as to be of little value.

Bailey's[12] case showed a cord softened and compressed by the aneurysm and dotted with hemorrhages. His patient had presented symptoms of brain tumor for two or three years. The position and size of the aneurysm are not given.

Hedinger's[13] case occurred in the right vertebral artery and was of the size of a hazel-nut. The patient had been syphilitic for twenty-four years and for the last eight years had presented a left side hemiplegia. Fourteen days before death violent headache set in with vomiting, slowing of pulse and variable loss of consciousness. Hedinger's report is brief, consisting of only eleven lines, does not locate the aneurysm precisely nor state its possible relation to the hemiplegia.

Babonniex's[14] specimen was 5 mm. below the basilar and of the size of a pea. The patient died with

1. Lebert: Berl. klin. Wchnschr., 1866, iii, 60.
2. Cruveilhier: Anatomie Pathologique, 1838-1842, xxviii, Plate III, (Paris text).
3. Hodgson, Langstaff: Traité des maladies, des artères et des veines, Breschet's translation, i, 89.
4. Von Hofman: Wien. klin. Wchnschr., 1894, p. 823.
5. Ruston and Southard: Boston Med. and Surg. Jour., 1906, cliv, 312.
6. Ladame and Monakow: Nouv. iconog. de la Salpêtrière, 1900, xiii.
7. Rindfleisch: Lichtheim's Festschrift, Deutsch. Arch. f. klin. Med., 1905, lxxxvi, Parts 1 to 3.
8. Beadles, C. F.: Brain, 1907, p. 285.
9. Schulze, F.: Virchows Arch. f. path. Anat., 1873, lxv, Part 3.
10. Moser: Deutsch. Arch. f. klin. Med., 1884, xxxv, 438.
11. Boinet, E.: Compt. rend. Soc. de biol., 1910, lxix, 210.
12. Bailey, P.: Med. Rec., New York, 1913, lxxxiii, 268.
13. Hedinger, E.: Cor.-Bl. f. schweiz. Aerzte, 1905, xxxv, 26.
14. Babonniex, L.: Gaz. d. hôp., 1913, lxxxvi, 1253.

an acute pericarditis. Symptoms prior to the present illness were never cerebral. She had "paroxysmal tachycardia" showing at necropsy a chronic interstitial nephritis, arteriosclerosis and a heart weighing 530 gm. with no valvular lesions. The pneumogastric centers showed no degenerations histologically. It would appear that the aneurysm had produced no symptoms.

Mathew and Pirie[15] report an aneurysm of the *basilar* artery which had ruptured, and since it closely resembles this case clinically it will be given in more detail. No statements are made as to the presence of previous attacks. The patient dropped unconscious at a railway station, flaccid, cyanosed and with stertorous breathing. Temperature subnormal, pulse 62, regular. In two hours consciousness returned, he threw his limbs around uneasily and in two hours woke up with frontal headache.

On the next day he complained of occipital and lumbar pain. On the fourth day of the disease he again became unconscious for two hours. On the fifth day the spinal fluid was found blood stained. In the evening he again became unconscious and died in fifteen minutes by asphyxia. The pulse continued sixty seconds after respirations ceased.

At necropsy the aneurysm was 13 by 7 mm., at the anterior end of the basilar artery; but the point of blood escape could not be made out. Much blood was present in the meninges over the base. Microscopically it showed endarteritis proliferans. The lesion was local, no other arteries being pathologically altered.

He summarizes his case as follows: Successive (?) brief, unconscious attacks, quickly recovered from with only headache remaining, and death in five days. The perforation in the aneurysm was probably small and the first two hemorrhages small, the symptoms abating as the blood diffused. The third attack caused death by pressure on the medulla, with respiratory failure.

Etiology.—It is not within the scope of this communication to discuss the cause of aneurysm in general. It is felt that a special statement should be made, however, in regard to the factors concerned in the causation of intracranial ones. In the case here reported the subject was a sailor, aged 40, showing only a local cerebral arteriosclerosis and no somatic arteriosclerosis. The Wassermann reaction was positive. His lesion, then, was local and all signs pointed to syphilis as the important factor causing weakness of the artery walls. In other cases it must be noted that these arteries have normally very thin walls, and are very poorly supported externally so that it is not necessary that the lesion should be a deep one (syphilitic) in order to produce a serious grade of weakening. The same reasoning applies to the vertebral arteries (and other thin-walled basal cerebral arteries) as does to the smaller branches of the cerebrals, whose common miliary aneurysms constantly precede apoplectic lesions, and in which no one attempts to invoke an invariable or even usual syphilitic causation. We should therefore be less hasty in suspecting syphilis as the cause of these cerebral aneurysms than in the case of extracerebral aneurysms.

Pathogenesis.—After reviewing the foregoing cases it is possible to divide them into two groups, acute and chronic. Most of the cases had produced symptoms for two or three years (Bailey's and Moser's cases) and showed degeneration of the nearby nervous tissue. Others were cases of sudden death by hemorrhage with no preliminary symptoms and no degenerations found at necropsy.

It is believed that the case here reported belongs in the acute class and that the initial expansion occurred on shipboard five days before necropsy. This idea is given in part because the patient was in good health prior to the fatal attack, but more from the postmortem findings. Grossly the aneurysmal thrombus was black, with faintly indicated peripheral lamination. The walls were not fibrosed nor adherent to nearby structures. Microscopically, too, the thrombus was fresh in type and easily so young as five days. I realize as Smith[16] has pointed out, that the lack of organization of the thrombus does not avail here in age determination, on account of the known failure of organization even in very old aneurysms. Furthermore, sections taken from the medulla immediately in contact with the aneurysm show no degenerations when prepared by Weigert's method.[17]

With the initial expansion on shipboard there was probably minor hemorrhage, although the sudden pressure during expansion may have been the sole factor in producing the suddenly occurring initial symptoms. A continuation of the pressure gave rise to the violent second set of symptoms noted on arrival at the hospital, and by this time hemorrhage surely had taken place, as shown by discovery of blood in the fluid from spinal puncture. It was during this period (that is, early) too, that the media was broken, for the red blood cells observed microscopically between the segments are of some standing, as shown by tendency to lysis and the presence of blood pigment granules. Coagulation of the blood probably prevented any massive loss at this time, but during the four or five days of somnolence the elastica suffered progressive stretching and weakening, as shown microscopically by loss of corrugation, its ultimate rupture giving massive hemorrhage and death by pressure on respiratory centers.

That death takes place regularly by respiratory failure is shown by the frequency with which cyanosis is mentioned in recorded cases as a terminal symptom, and by several special statements that the heart continued to beat many (60) seconds after the respirations ceased.

Of the recorded cases, those of Babonniex and Mathew and Pirie were doubtless of this acute nature. Many of von Hofman's were surely also acute, but the exact proportion is indeterminate from lack of clinical history and detailed necropsy reports.

Diagnosis.—Beadles[8] discusses the subject of diagnosis of intracranial aneurysms in general at some length. He brings out the fallacy of bruits, which may also be produced by tumors which press on an artery. Hissing and buzzing sounds experienced by the patient are, in similar way, fallacious. With our present diagnostic armamentarium it appears that the positive diagnosis of intracranial aneurysm cannot be made. It may be suspected when there is sudden boring subоccipital pain, and blood in the spinal fluid. The diagnosis of intrameningeal hemorrhage may be

15. Mathew, E., and Pirie, J. H. H.: Rev. Neurol. and Psychiat., Edinburgh, 1911, ix, 107.

16. Smith, A. J.: Personal communication.

17. That such degenerations may be produced by aneurysms in this position is shown in other reported cases (Moser, Bailey, Footnotes 10 and 12) and that even pea-sized ones may do so by Beadle's personal case. In some of these cases definite cerebral symptoms had existed a long time.

made, but localization of an aneurysm to a particular artery is not to be expected.

Treatment.—With such imperfect means of diagnosis little hope can be held out of curative measures. Ligation of the carotid artery has been contemplated (Hutchinson[18]) in one case in which a bruit was heard, but operation was refused. It is difficult to conceive how such a procedure could avail when there is such an adequate collateral circulation as the circle of Willis affords.

242 North Sixty-First Street.

TREATMENT OF SYPHILIS OF THE BRAIN *

A PRELIMINARY REPORT OF THE USE OF MERCURIC CHLORID INTRADURALLY

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The proof that general paralysis of the insane is an active syphilitic disease,[1] together with the advent of intradural medication, has given a new hope in the treatment of these unfortunates.

The choice of technic in intradural treatment lies between the Swift and Ellis method,[2] the Ravaut method,[3] and the Byrnes method.[4]

The high cost of salvarsan and the scarcity of this product in our Western market have prevented us from using the Swift and Ellis method to any great extent. We were attracted by the Byrnes method because of its apparent freedom from danger and its low cost.

The patients here reported, twenty-three in number, have all been diagnosed clinically as having general paralysis, and the clinical diagnosis has been accepted as the basis for this work. The patients have not been selected as to the duration of disease, stage, or physical condition; but rather as they came to this particular service. This series represents, however, mostly the so-called third stage.

The technic of treatment is practically the same as described by Byrnes.[4] About 40 c.c. of blood are taken, under aseptic conditions, from one of the veins of the forearm, and the serum allowed to separate. To 12 c.c. of clear serum is added 1 c.c. of a sterile solution of mercuric chlorid containing $\frac{1}{50}$ grain, and 17 c.c. of sterile normal salt solution prepared from freshly distilled water. This total of 30 c.c. is heated to 56 C. in a water bath for thirty minutes. Lumbar puncture is performed and from 15 to 30 c.c. of fluid are withdrawn, and the 30 c.c. of diluted mercurialized serum is slowly injected. We have used a 25 c.c. Lüer syringe.

In those cases in which neosalvarsan was given, the usual Swift and Ellis technic was used. The serum has been administered within twenty-four hours of its preparation. The interval between injections has been determined by the condition of the patient.

The Wassermann tests were carried out with original technic in one-tenth quantities.

Antigens: Alcoholic extract of beef heart and this same antigen fortified with cholesterin 0.4 per cent.

Patient's blood serum used in 0.1 c.c. unless otherwise noted.

Patient's spinal fluid used in 0.1 c.c., 0.5 c.c. and 1 c.c.

Hemolytic system used was rabbit antisheep.

Complement was from the pooled serum of guinea-pigs.

Globulin test made according to Nonne.[5]

Cells counted with Thoma-Zeiss hemocytometer.

Lange's colloidal gold test according to Miller and Levy.[6]

In those spinal fluids which had the slightest tinge of blood no cell count, Nonne's or Lange's was done. There were, however, several tubes which on their arrival at the laboratory had perfectly clear fluid but a very slight blood sediment. No cell counts were made on these, but a globulin and Lange's tests were performed.

The following case records show the clinical and serologic findings. Many of these patients had treatment before coming under our observation but their histories are indefinite and do not include intraspinal injections:

CASE 1 (B).—The patient has delusions of grandeur, hears voices, is violent and has to be restrained. Knee jerks are absent, the pupils are of the Argyll Robertson type, there are fibrillary tremors, the tongue is tremulous, deflected to right, and there is ataxia of speech and gait.

Treatment: 14 intraspinal injections of mercurialized serum; 1 Swift and Ellis 40 per cent. neosalvarsanized serum; 14 grains of mercury succinimid intramuscularly. Total mercury: intraspinal, ⅓ grain; total serum, 180 c.c. Results: At present the patient is mentally clear, the neurologic signs being absent except that the pupils are unequal. Wassermann, blood serum and spinal fluid tests were negative; the globulin test doubtful, 40 cells; Lange's test positive.

CASE 2 (C).—The patient has delusions of grandeur, hears voices, sees things, shows extreme fabrication, is excitable, weak and anemic. Weight is 86 pounds. Knee jerks +; pupils, Argyll Robertson. There are fibrillary tremors and ataxic speech and gait.

Treatment: 6 intraspinal injections of mercurialized serum; Swift and Ellis 40 per cent. neosalvarsanized serum; 5 grains of mercury succinimid intramuscularly. Total mercury: intraspinal ⅛ grain; total serum, 120 c.c. Results: The patient is mentally clear, neurologic signs absent except delayed knee jerks. Weight is 119 pounds. Wassermann on blood, 0.2 c.c., positive; spinal fluid, 1 c.c., positive; globulin negative, 10 cells; Lange's positive.

CASE 3 (A).—The patient has delusions of grandeur, is excitable, talkative and filthy. Knee jerks +, pupils normal, reaction +. Ataxic speech and gait. Blood pressure 182 mm. Hg.

Treatment: 4 intraspinal injections of mercurialized serum; 3 Swift and Ellis 40 per cent. neosalvarsanized serum. Total mercury: intraspinal, $\frac{1}{12}$ grain, total serum, 84 c.c. Results: clinical and mental improvements, some lessening of neurologic signs. Sudden death occurred, following cerebral apoplexy.

18. Hutchinson: Tr. Clin. Soc., viii, 127.

* The tables showing in detail the clinical and serologic controls in this series are omitted from this article because of limited space, but will appear in full in the author's reprints.

1. Noguchi: Jour. Exper. Med., 1913, xvii, 232.

2. Swift, Homer E., and Ellis, Arthur W. M.: The Treatment of Syphilitic Affections of the Central Nervous System, with Especial Reference to the Use of Intraspinous Injections, Arch. Int. Med., Sept. 15, 1913, p. 331.

3. Ravaut: Ann. de méd., 1914, No. 1, p. 49.

4. Byrnes, Charles Metcalfe: The Intradural Administration of Mercurialized Serum in the Treatment of Cerebrospinal Syphilis, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2182.

5. Nonne: Syphilis and the Nervous System, Philadelphia, J. B. Lippincott Company, Ed. 2.

6. Miller and Levy: Bull. Johns Hopkins Hosp., 1914, xxv, No. 279, p. 133.

CASE 4 (Q).—The patient has delusions of grandeur and persecution, hears voices and see things. Knee jerk +, pupils normal, Romberg +. Fibrillary tremors and ataxia are present.

Treatment: 2 intraspinal injections of mercurialized serum, 4 Swift and Ellis 40 per cent. neosalvarsanized serum. Total mercury: intraspinal, 1/25 grain; total serum, 72 c.c. Results: none permanent mentally or physically; Wassermann on blood always negative, spinal fluid positive; globulin positive, 60 cells; Lange's positive; patient went on to usual death of paresis.

CASE 5 (K).—The patient has delusions of grandeur and persecution, and is depressed. Knee jerks +. There are fibrillary tremors and ataxia. Blood pressure 173 mm.

Treatment: 8 intraspinal injections of mercurialized serum, 8 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/6 grain; total serum, 96 c.c. Results: no particular change. Sudden death following cerebral apoplexy.

CASE 6 (Y).—The patient has delusions of grandeur and is restless. Knee jerks +, pupils, Argyll Robertson; Romberg +. There are fibrillary tremors and ataxic speech and gait.

Treatment: 5 intraspinal injections of mercurialized serum, 5 grains of mercury succinimid intramuscularly. Total mercury; intraspinal, 1/10 grain; total serum, 60 c.c. Results: Mental improvement except that the patient is emotional; neurologic signs are absent, Wassermann on blood is doubtful; spinal fluid positive; globulin partially positive, 40 cells; Lange's positive.

CASE 7 (R).—The patient has delusions of grandeur and is restless. Knee jerks +, pupils Argyll Robertson, Romberg +. There are tremors and ataxia.

Treatment: 6 intraspinal injections of mercurialized serum; 6 grains mercury succinimid intramuscularly. Total mercury; intraspinal, 1/4 grain; total serum, 72 c.c. Results: no change clinical or serologic.

CASE 8 (G).—The patient has delusions of grandeur and persecution, high sexual desire and is depressed. Knee jerks +, pupils Arygll Robertson, Romberg +. Ataxia and tremors are present.

Treatment: 9 intraspinal injections of mercurialized serum; 9 grains of mercury succinimid intramuscularly. Total mercury: intraspinal, 9/50 grain; total serum, 108 c.c. Results: At times patient is rational, delusions less active. Knee jerks +, Argyll Robertson +, Romberg —. Ataxia is not present; Wassermann on the blood has always been negative, on the spinal fluid, variable; globulin faintly positive, 50 cells; Lange's variable.

CASE 9 (T).—The patient has no delusions but is depressed. Knee jerks +, pupils, Argyll Robertson, Romberg +. There are fibrillary tremors and ataxia.

Treatment: 7 intraspinal injections of mercurialized serum; 7 grains mercury succinimid intramuscularly. Total mercury: intraspinal 1/7 grain; total serum, 84 c.c. Results: Patient is mentally improved. Knee jerks —, Romberg —, pupils Argyll Robertson; tremors and ataxia less. Wassermann on blood partially positive; spinal fluid positive; globulin positive, 90 cells; Lange's positive.

CASE 10 (F).—The patient has delusions of grandeur and persecution, sees and hears things and is violent. Knee jerks +, pupils, Argyll Robertson, reaction +. There are tremors and ataxia.

Treatment: 13 intraspinal injections of mercurialized serum; 13 grains of mercury succinimid intramuscularly. Total mercury: intraspinal, 1/4 grain; total serum, 156 c.c. Results: No change clinically, Wassermann on blood partially positive; spinal fluid positive; globulin partially positive, 20 cells; Lange's positive.

CASE 11 (O).—The patient has delusions of grandeur, sees and hears things, is violent and has to be restrained. Knee jerks are retarded, the pupils are normal. Ataxia and tremors are present.

Treatment: 4 intraspinal injections of mercurialized serum; 3 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/12 grain; total serum, 48 c.c. Results: No delusions, no hallucinations, clean, bright, neurologic signs, ataxia and tremor less, otherwise no change. Wassermann on blood partially positive; spinal fluid positive; globulin positive, 11 cells; Lange's positive.

CASE 12 (M).—The patient has delusions of grandeur, sees and hears things and varies from extreme emotion to elation. Knee jerks +, pupils, Argyll Robertson, Romberg +. Ataxia and tremors are present.

Treatment: 5 intraspinal injections of mercurialized serum; 5 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/10 grain; total serum, 60 c.c. Results: slight mental improvement, neurologic; Argyll Robertson —; Romberg —. Ataxia and tremors gone; Wassermann always negative on blood and spinal fluid; globulin positive, 98 cells; Lange's positive.

CASE 13 (P).—The patient has delusions of grandeur and persecution and is violent. Knee jerks +, pupils, Argyll Robertson. Tremors are present.

Treatment: 13 intraspinal injections of mercurialized serum; 2 Swift and Ellis neosalvarsanized serum; 13 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/4 grain; total serum, 180 c.c. Results: no change mentally or neurologically; Wassermann on blood, doubtful; spinal fluid positive; globulin doubtful, 160 cells; Lange's positive.

CASE 14 (W)—The patient has delusions of grandeur, is dull and confused. Knee jerks +, Romberg +, pupils, Argyll Robertson; there are ataxia and tremors.

Treatment: 5 intraspinal injections of mercurialized serum; 5 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/10 grain; total serum, 60 c.c. Results: no change mentally, or physically; Wassermann on blood and spinal fluid positive; globulin positive, 30 cells; Lange's positive.

CASE 15 (S).—The patient has delusions of grandeur and is violent. Knee jerks —, Romberg +; pupils, Argyll Robertson. There are ataxia and tremors.

Treatment: 7 intraspinal injections of mercurialized serum; 5 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/7 grain; total serum, 84 c.c. Results: Mentally patient is somewhat improved; knee jerks normal; Romberg —, Argyll Robertson, retarded. There is no ataxia or tremor; Wassermann on blood doubtfully positive, spinal fluid positive; globulin positive, 190 cells; Lange's positive.

CASE 16 (U).—The patient has delusions of grandeur, is depressed and untidy. Knee jerks —, Romberg +. The pupils are normal, there is ataxia and tremor.

Treatment: 4 intraspinal injections of mercurialized serum; 4 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/22 grain; total serum, 48 c.c. Results: Patient is mentally improved, ataxia and tremor gone; knee jerks normal, Romberg —; pupil, Argyll Robertson. Wassermann on blood and spinal fluid positive; globulin positive, 90 cells; Lange's positive.

CASE 17 (H).—The patient has delusions of grandeur and is depressed. Knee jerks —, pupils, Argyll Robertson; Romberg +. There are ataxia and tremors.

Treatment: 12 intraspinal injections of mercurialized serum; 11 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/4 grain; total serum, 144 c.c. Results: Delusions are not so pronounced, patient is more tidy, ataxia is less. Wassermann on blood is doubtfully positive; on spinal fluid positive; globulin positive, 70 cells; Lange's negative.

CASE 18 (V).—The patient has delusions of grandeur, hears things, and is untidy. Knee jerks +, pupils normal, Romberg +. There are ataxia and tremors.

Treatment: 6 intraspinal injections of mercurialized serum; 6 grains mercury succinimid. Total mercury: intraspinal, 1/8 grain; total serum, 72 c.c. Results: Patient is mentally clear, knee jerks —, Romberg —; pupils normal; no ataxia or tremor; Wassermann on blood and spinal fluid positive; globulin positive, 10 cells; Lange's positive.

Case 19 (E).—The patient has delusions of grandeur, is violent and untidy. Knee jerks +, pupils, Argyll Robertson, Romberg +. There are ataxia and tremors.

Treatment: 16 intraspinal injections of mercurialized serum; 1 Swift and Ellis 40 per cent. neosalvarsanized serum, 16 grains mercury succinimid intramuscularly. Total mercury: intraspinal, ⅓ grain; total serum 204 c.c. Results: The patient is mentally clear, pupils normal; knee jerks +, Romberg +. There is some tremor: Wassermann on blood always negative, spinal fluid partially positive; globulin partially positive, 20 cells; Lange's positive.

Case 20 (L).—The patient has delusions of grandeur and is violent. Knee jerks +, pupils, Argyll Robertson, Romberg +. Ataxia and tremors are present.

Treatment: 16 intraspinal injections of mercurialized serum; 16 grains mercury succinimid intramuscularly. Total mercury: intraspinal, ⅓ grain; total serum, 192 c.c. Results: Variable improvement mentally, ataxia and tremors gone. Knee jerks, pupils, Argyll Robertson, Romberg +. Wassermann on blood partially positive; spinal fluid positive; globulin positive, 60 cells; Lange's positive.

Case 21 (X).—The patient has delusions of grandeur and is depressed. Knee jerks +, pupils Argyll Robertson, Romberg +. There are ataxia and tremors.

Treatment: 5 intraspinal injections of mercurialized serum; 5 grains mercury succinimid intramuscularly. Total mercury: intraspinal, 1/10 grain; total serum, 60 c.c. Results: Patient is brighter, delusions are indefinite; no change in physical signs. Wassermann on blood, partially positive; spinal fluid positive; globulin positive, 40 cells; Lange's positive.

Case 22 (D).—The patient has delusions of grandeur, is restless and hears things. Knee jerks +; pupils, Argyll Robertson; Romberg +. There are ataxia and tremors.

Treatment: 13 intraspinal injections of mercurialized serum; 13 grains mercury succinimid intramuscularly. Total mercury: intraspinal, ¼ grain; total serum, 152 c.c. Results: no change, Wassermann in blood always negative, spinal fluid variable; globulin positive, 20 cells; Lange's positive.

Case 23 (I).—The patient has no delusions, but is unconscious at times and has flighty and disconnected speech. Knee jerks +; pupils, Argyll Robertson, Romberg +. There are fibrillary tremors but no ataxia.

Treatment: 2 intraspinal injections of mercurialized serum; 7 Swift and Ellis 40 per cent. neosalvarsanized serum; 11 neosalvarsan intravenously. Total mercury: intraspinal, 1/15 grain; total serum, 108 c.c. Results: Patient is normal mentally; knee jerks slightly exaggerated, and pupils still sluggish, Wassermann on blood negative; spinal fluid positive in 1 c.c.; globulin negative, 30 cells; Lange's negative.

Practically all mercurialized serum given prior to March 30 with the exception of that given to Patient 1 was prepared from pooled blood serum. The reactions were those of severe pain in back, legs and testes. About March 21 all patients receiving treatment had very marked depression and constipation. This depression was so severe that a two weeks' interval was necessary before resuming treatment. The spinal fluid of one of the donors at that time was orange yellow, but did not give hemoglobin reaction. Subsequently his blood was not included in the pool and no recurrence of a universal depression followed. When we changed to autogenous serum most of the patients remarked on the lessened reaction.

In all but three cases there has been a clinical improvement some time during their treatment. This improvement has taken place by the fifth treatment in 75 per cent. of the remaining twenty cases. There has been a tendency to a return to their former clinical state some time later in 40 per cent. of those improved.

In 15 per cent. the improvement reached a certain point and seemed to proceed no further as in Patient D., who improved after his sixth treatment but has remained stationary through his following seven treatments.

The serologic improvement has not been so marked or so constant as the clinical. Of the fifteen patients who received the 1/20 grain mercuric chlorid intradurally, 46 per cent. had a severe reaction and 54 per cent. no more severe than usual; 61 per cent. had their Wassermann in the spinal fluid temporarily converted to a negative, while 38 per cent. were not immediately influenced. We did not continue the 1/20 grain injections because the reactions were too severe.

The marked fluctuations in the pupillary reactions and knee jerks are of interest, as an exaggerated knee jerk may become temporarily lost and vice versa. We have not noticed any constant relation between the globulin reaction, cells and colloidal gold test.

In only two cases out of the twenty-three have we seemed to be able to convert the colloidal gold test to a more or less permanent negative. The globulin reaction and pleocytosis were very variable and seemed to follow no definite course.

CONCLUSIONS

The injections of 1/20 grain of mercuric chlorid intradurally, by the method of Byrnes, is apparently safe.

Autogenous serum is much preferable to pooled serum.

The reactions are a little more severe than following the Swift and Ellis method of 40 per cent. salvarsanized serum.

A clinical improvement usually appears after about five treatments; 75 per cent. of our cases showed this improvement.

A tendency to relapse to their former condition was observed in about 40 per cent. of those at first improved.

The clinical improvement is more marked and rapid than the serologic.

How permanent the improvement will be we are unable to state, as the time of observation is too short.

We are encouraged to continue this study, however, and a later report will be given on these patients after further treatment and observation.

The colloidal gold test is the most resistant to change.

It is possible to have clinical general paralysis with a negative Wassermann reaction in blood serum and spinal fluid, but in this series the colloidal gold test was uniformly positive.

Honor to Spanish Physician.—The *Siglo Medico* of July 31 relates that the town physician of Cercedilla, Spain, Dr. A. Cañadas, was treating a pauper child of 3 for a severe burn; deeming a skin graft necessary, he took it from his own person and cured the child. The local authorities and the people of Cercedilla published an appeal in a Madrid paper petitioning for an official reward for this act of altruism. The minister of the interior, the governor and municipality of Madrid and others, including the medical profession, organized a banquet in his honor at the Escorial. One of the lay speakers said that Cañadas' act "should be engraved with letters of gold in the pages of humanity." Cañadas illustrated the technic with which he was able to cut from his own skin the extensive piece required. Steps are being taken to have the cross of the order of Beneficiencia conferred on him.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

PINEAL GLAND

The functions of this gland have not yet been established but there is some pathological and some experimental evidence that there is a relation between the gland and some processes of development and growth; the nature of this relation is unknown. Adiposis is a frequent sign of disturbed pineal function, but observers are not agreed whether to interpret this as indicating hypofunction or hyperfunction, or possibly a concurrent disturbance of the pituitary. In some instances intravenous injections of pineal extract have seemed to cause a distinct fall in blood pressure. It has been inferred from observations in cases of pineal tumors in the young that the gland in young individuals furnishes a secretion which inhibits growth, particularly the development of the reproductive glands, but the results of experimental administration of pineal substance orally have led other observers to infer that the pineal secretion favors physical and possibly mental and sexual development. It has been suggested that, as all evidence points to the fact that the function of the pineal gland is one of early life, extract of adult pineal glands might be expected to be inert. Experiment has also indicated greater activity in glands obtained from young animals than in those obtained from older ones. The Council has accepted this preparation simply for experimental purposes.

DESICCATED PINEAL GLAND—Armour.—The pineal gland of normal cattle freed from connective and other tissue, dried and powdered without the addition of preservative or diluent.

Actions and Uses.—See general article Pineal Gland, above.

Dosage.—From 0.003 to 0.006 gm. (1/20 to 1/10 grain) three times a day, in powder or tablets.

Manufactured by Armour & Co., Chicago. No U. S. patent or trade-mark.

Pineal Gland Tablets Armour.—Each tablet contains desiccated pineal gland 1/20 grain.

Desiccated pineal gland Armour is a light yellow powder having a peculiar odor; it is partly soluble in water.

One part represents approximately seven parts of fresh tissue. On incineration it should yield not more than 8 per cent. of ash.

SCOPOLAMINE STABLE, Roche. — Scopomannit. — An aqueous solution of pure scopolamine hydrobromide, protected against decomposition by the addition of 10 per cent. of mannite, supplied in ampules, each containing 1.2 c.c. (1 c.c. contains 0.0003 gm. scopolamine hydrobromide).

Actions, Uses and Dosage.—The same as Scopolaminae hydrobromidum, U. S. P. (See Useful Drugs or Physician's Manual of the U. S. P. and N. F.).

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (The Hoffmann-LaRoche Chemical Works, New York). No U. S. patent. German patent No. 266,415. U. S. trade-marks Nos. 103,288 and 103,289.

Scopolamine stable, Roche, is prepared from freshly manufactured scopolamine hydrobromide having an optical activity of — 26.0° for the sodium line (determined in an aqueous solution containing the equivalent of 4.5 Gm. of anhydrous scopolamin hydrobromide in 100 Cc. at a temperature of 15 C. in a 100 millimeter tube) and a melting point of 195 C. by dissolving in an aqueous 10 per cent. solution of mannite.

That scopolamine stable, Roche, contains all of its scopolamine in an undecomposed state may be determined by comparing its action with that of a freshly prepared solution of scopolamine hydrobromide. For this purpose the manufacturers recommend the method of Langer, in which the frog heart is stopped by muscarine, or, better, by pilocarpine, and the systolic heat is reestablished by the addition of scopolamine, which is antagonistic to both muscarine and pilocarpine.

COAGULEN CIBA.—Coagulen, Kocher-Fonio.—Coagulia, Kocher-Fonio.—An extract said to be prepared from blood-platelets and to contain thromboplastic substance (cytozym, thrombokinase, thrombozym), mixed with lactose, 1 gm. representing 20 gm. dried blood.

Actions and Uses.—Coagulen Ciba is said to act as a hemostatic by increasing and accelerating the natural process of coagulation. It is claimed that the thrombozym contained in Coagulen Ciba reenforces the thrombozym already present in the blood, and that the combined action of the two on the thrombogen increases the formation of thrombin and thus the conversion of fibrinogen into solid fibrin. Coagulen Ciba is said to be useful in the treatment of local hemorrhage, parenchymatous concealed, inaccessible and pulmonary hemorrhage, surgical operations (including laparotomy, operations on bony structures and eradication of tumors) and in gynecology.

Dosage.—Solutions of Coagulen Ciba generally 5 per cent. are used locally, intramuscularly and intravenously. The subcutaneous or intravenous injection is contraindicated in cases in which there is a tendency to thrombosis or embolism, for example, in arteriosclerosis, aneurysm, heart weakness, phlebitis, certain stages of lues and in varicose veins. Solutions should be freshly made by dissolving in physiologic salt solution and sterilizing this by boiling for three minutes. In urgent cases ordinary water may be used as a solvent.

Manufactured by the Society of Chemical Industry, Basel, Switzerland (A. Klipstein and Co., New York). No U. S. patent. U. S. trade-mark No. 99,809.

Coagulen Ciba is a yellowish, granular powder, having a slight odor and a sweet taste. It is very soluble in water and such solution may be boiled for two or three minutes without decomposition. The active principle of Coagulen Ciba is also soluble in alcohol and chloroform.

TETANUS ANTITOXIN, UNCONCENTRATED (See N. N. R., 1915, p. 289).

The Cutter Laboratory, Berkeley, Calif.

Tetanus Antitoxin for Human Use.—Marketed in syringes containing 1,500, 3,000 and 5,000 units each.

DIPHTHERIA ANTITOXIN, CONCENTRATED (See N. N. R., 1915, p. 286).

The Cutter Laboratory, Berkeley, Calif.

Diphtheria Antitoxin, Globulin.—Marketed in syringes containing 2,000, 3,000, 4,000, 5,000 and 10,000 units each.

ANTIPNEUMOCOCCUS SERUM (See N. N. R., 1915, p. 296).

The Cutter Laboratory, Berkeley, Calif.

Anti-Pneumococcic Serum.—Marketed in syringes containing 10 Cc.

NORMAL HORSE-SERUM (See N. N. R., 1915, p. 282).

The Cutter Laboratory, Berkeley, Calif.

Normal Serum (from the Horse).—Marketed in syringes containing 10 Cc.

LIQUID PETROLATUM.—Petrolatum Liquidum.—Liquid petrolatum is described in the U. S. Pharmacopeia. For description see the Pharmacopeia or Useful Drugs.

Non-Proprietary Preparation:

Calol Liquid Petrolatum, Heavy.—Liquid petrolatum said to be derived from California petroleum and to be composed essentially of hydrocarbons of the naphthene series. Manufactured by the Standard Oil Co. of California, San Francisco.

It is colorless, non-fluorescent, practically odorless and tasteless. Specific gravity 0.886 to 0.892 at 15 C. or 0.881 to 0.887 at 25 C. It complies with the tests of the U. S. Pharmacopeia (8th ed.) and in addition to the following test:

If 5 c.c. of sulphuric acid, U. S. P., are mixed with 5 c.c. of nitric acid, U. S. P., in a 25 c.c. glass-stoppered cylinder, and after the mixture has cooled, 5 c.c. of liquid petrolatum be added and the mixture shaken for thirty seconds, neither the test reagent nor the liquid petrolatum should assume a color deeper than canary yellow, nor should any matter separate at the junction of the liquids. (This test is claimed by the manufacturers to show absence of unsaturated hydrocarbons.)

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SATURDAY, SEPTEMBER 25, 1915

TO WHAT ARE DUE THE EFFECTS OF ALTITUDE ON MAN?

The physiologic effects of altitude on the human organism have a twofold interest. The purely scientific aspects of life under conditions of lowered barometric pressure are of themselves deserving of careful investigation. The fact that altitude plays a part in many therapeutic recommendations and forms a feature of climatology applied to medicine furnishes an added reason why the subject should be placed on a rational basis. The familiar phenomenon of mountain sickness is an ordinary example of the undoubted effect of a sojourn at higher levels on the functions of the body. As soon as an attempt is made to interpret the physiologic phenomena of altitude in terms of their causes, difficulties arise. The literature is full of contradictory theories and conclusions.[1] The reason for this uncertainty is doubtless to be found in the complexity of the factors which enter into the environment of man at high altitudes. Among the climatic variables are the lowered atmospheric pressure, with its lowered partial pressure of oxygen, and exceptional conditions of temperature, humidity, light and movements of the air and its ionization. Little wonder that some confusion of facts and their interpretation has arisen amid such a possibility of complications. Owing to the very nature of the case, the attempts to consider the factors one by one have not always succeeded.

There is apparently an agreement that at least some of the most prominent of the effects of altitude are directly attributable to the barometric changes with the consequent lowering of the oxygen pressure of the atmosphere. These special features can, of course, be imitated in a pneumatic cabinet — an air-tight chamber in which the pressure of the atmosphere can be reduced to any degree corresponding to known heights and in which the air can be renewed from time to time. One or two factors may be studied at a time, and humidity or isolation or light or temperature can be changed independently. As might be expected, pneumatic cabinets have frequently been requisitioned for the study of physiologic responses to lowered barometric pressure. Until recently, it has been practically impossible to try any very prolonged experiments on man, at least in the small "closed boxes" that have been available. For psychic and physical comfort, something more elaborate is required if a stay in the cabinet is to be ordinarily endurable. It was the appreciation of the unique appropriateness of the pneumatic cabinet for dissociating the concomitant variables of the surroundings in the laboratories at high altitudes, as well as the realization of the need of tolerable comfort, that led to a unique enterprise at the Finsen Institute in Copenhagen. Hasselbalch and Lindhard[2] have constructed what may be termed, by way of comparison with its predecessors, a palatial pneumatic cabinet equipped with scientific and gymnastic apparatus, a bed, a telephone, water, electric appliances, etc., and intended for prolonged residence. Here Lindhard actually resided for twenty-six days in succession, becoming "acclimated" gradually to a reduced barometric pressure of 450 mm., at which he lived for two weeks. Here each climatic factor could be separately controlled.

The novel experiments already conducted in this apparatus — a sort of alpine resort brought to the sea level — show the most familiar effects observed at altitudes, namely, the acceleration of the pulse and accompanying changes in the circulation of the blood, and the augmentation of the frequency and depth of respiration. These are, therefore, clearly due to the rarefaction of the atmosphere and the lowered partial pressure of oxygen. It has further been demonstrated that, even in the prolonged stay at an atmospheric pressure of 455 mm., the consumption of oxygen was entirely uninfluenced by the oxygen pressure of the atmosphere. Therefore the lowered barometer alone is without effect on the extent of respiratory metabolism. It remains to be seen what further results alterations in the climatic environment can bring about.

1. See the review of the literature in von Fürth, O.: Probleme der physiologischen und pathologischen Cnemie, Leipzig, 1913, ii, 585 et seq. Cohnheim, O.: Ergebn. d. Physiol., 1903, ii, I, 612.

2. Hasselbalch, K. A., and Lindhard, J.: Zur experimentellen Physiologie des Höhenklimas, II, Biochem. Ztschr., 1913, lxviii, 265; III, ibid., p. 295.

THE ARTIFICIAL FIXATION OF ATMOSPHERIC NITROGEN

Broadly speaking, nitrogen plays two rôles with relation to life: At the behest of Nature, it nourishes; at the bidding of man, it destroys. Nature makes Peruvian guano; man makes gunpowder and nitroglycerin. Today the greater part of Europe is expending its fixed nitrogen in destroying life at a rate hitherto unknown in the world's history.[3] "Every cannon-shot," says Duncan,[4] "disperses in an instant the fixed nitrogen which it required millions of microbes cen-

3. In Germany, where the fertilizer industry consumes about 800,000 tons of nitrate a year, the government is said to have confiscated all stores of nitrates for military purposes (Landis, W. S.: Jour. Indust. and Engin. Chem., May 1, 1915, p. 453.).

4. Duncan, Robert Kennedy: The Chemistry of Commerce, New York, Harper & Brothers, 1907.

turies to accumulate." If a war as gigantic as that now raging in the eastern hemisphere could have occurred a hundred years ago, the question might perhaps have been asked whether the waste of so much of the world's supply of combined nitrogen was not a greater, because a more irreparable calamity than the destruction of life which it caused. The human race could replenish itself far more rapidly than the slow processes of Nature could restore to the earth the fixed nitrogen necessary to make it fertile. Science has now relieved us of the fear of a famine in combined nitrogen, and no better time could be found for a glance backward over the nitrogen problem.

The imagination of even the tyro in chemistry cannot fail to be impressed by the massive paradox presented in this element, so obstinately inactive in its free state, so labile and energetic, both for good and for ill, in combination. The most tantalizing phase of this paradox is the boundless liberality with which Nature supplies the inert free nitrogen, and the niggardly parsimony with which she doles out the indispensable fixed nitrogen. Even in peace we consume and waste fixed nitrogen much faster than Nature supplies it. The higher forms of life on this planet, bathed as it is in vast and inexhaustible floods of free nitrogen, might actually be in danger of ultimate starvation for lack of assimilable fixed nitrogen if men had not found ways of ensnaring this element from the atmosphere, through both biochemical and purely chemical processes.

The biochemical processes are merely a speeding up of Nature's work on the soil. Marshall[5] regards Liebig, who first recognized nitrification in the soil, as the pioneer in this field. Pasteur first suggested that nitrification might be the work of micro-organisms. This hypothesis was verified by Schloesing and Müntz, who found that the formation of nitrates in the soil could be checked by the use of antiseptics. Winogradski isolated the organisms, and Hellriegel and Wilfart discovered the habitat of these organisms in the warty growths found on the roots of clovers and other leguminous plants. That the fertility of the soil can be increased by growing clovers in rotation is a fact that has been observed by farmers from the day of Pliny down. As Marshall says, "no more interesting scientific fact can be found than the culmination of centuries of observation and speculation in the classical experiments of Hellriegel and Wilfart." This discovery of the symbiotic fixation of nitrogen by bacteria and leguminous plants has been practically applied in the artificial inoculation of soils with nitrifying bacteria, a method which, Marshall estimates, has added millions of dollars to the wealth of the United States.

As for the purely chemical processes of nitrogen fixation, in the laboratory, of course, they are nothing new. Ever since Cavendish, in 1789, synthesized nitric acid from the atmosphere by means of the electric spark, the theoretical possibility of direct fixation of atmospheric nitrogen, without the intervention of living organisms, has been well recognized. The difficulties in the way of the practical realization of this possibility on a commercial scale, however, are many and great. They have now been surmounted with greater or less degree of success in processes falling into three groups: (1) direct synthesis of nitrogen and hydrogen to ammonia; (2) combustion of nitrogen and oxygen in the electric arc with nitric acid as the final product; (3) combination of nitrogen with metals and carbids.

The first of these groups, according to Landis,[6] is represented by only a single process, which has been industrially developed in Germany. Its use is said to be unprofitable in this country because it demands large amounts of skilled labor.

The first industrial attempt to convert atmospheric nitrogen into oxids and nitric acid by the aid of electricity (the second group of processes) was made in this country.[6] The enterprise, though not commercially successful, proved that nitrogen compounds could thus be synthesized on a larger scale, and thereby stimulated further attempts. These processes require great quantities of cheap power, and on that account have attained some development in Norway, which has natural advantages in its high waterfalls and mountain lakes.[7]

The third class of processes, in which atmospheric nitrogen is fixed by union with metals and carbids, is represented chiefly by the cyanamid process. The product, calcium cyanamid, is used directly as a fertilizer, and is capable of various transformations, as into ammonia, urea and dicyandiamid. It has a great commercial advantage over nitric acid, the end-product in the previous group of processes, in that it is readily transportable. According to Landis, there are fourteen cyanamid factories throughout the world, which last year produced about 300,000 tons of material carrying over 20 per cent. of nitrogen. The process is said to be the cheapest yet discovered for the direct fixation of atmospheric nitrogen, and to be well adapted for use in this country, which is already employing it to some extent.

The direct fixation of atmospheric nitrogen as a commercial enterprise is in its infancy, but doubtless the present war will prove a stimulus to its growth. Not only, as remarked before, are many great nations consuming vast stores of fixed nitrogen with almost incredible speed, but also some of them are cut off from the main sources of the natural supply. Thus

5. Marshall, Charles E.: The Technical Application of Microorganisms to Agriculture, Science, Aug. 27, 1915, p. 257.

6. At Niagara Falls, under the patents of Bradley and Lovejoy (Carpenter, F. B.: The Fixation of Nitrogen, Jour. Indust. and Engin. Chem., January, 1909, p. 4).

7. Eyde, Samuel: Oxidation of Atmospheric Nitrogen and Development of Resulting Industries in Norway, Jour. Indust. and Engin. Chem., October, 1912, p. 771.

there is the strongest possible incentive to inventive ingenuity and commercial initiative. No doubt we shall before long be able to supply our nitrogen needs at will.

ACIDOSIS AND THE REACTION OF THE BLOOD

Like the body temperature and the osmotic pressure of the blood, the normal neutrality or alkalinity of the circulating mediums of the organism is adjusted by a mechanism within the body, but permanently maintained by exchanges with the environment. Throughout the animal body, while life exists, there occurs a regular formation of acid substances, excretory products of metabolism.[1] As they form, these various matters, carbonic acid, sulphuric acid and phosphoric acid in the main, immediately combine, but only partially, according to their several avidities, with the basic constituents of protoplasm and blood. In pathologic conditions, great quantities of aceto-acetic acid and beta-oxybutyric acid may be produced and claim their share of base. Thus, through resulting changes in equilibriums between bases and acids, normal metabolism steadily operates to lower the unvarying alkaline reaction of the body. This tendency is held sharply in check by special protective mechanisms, acting coordinately, in cooperation and regular succession. The likelihood of a disturbance of the normal protective equilibrium between bases and acids is held in check by the kidney, which, in the process of urine formation, reverses the reaction of neutralization of acid and restores to the blood that alkali which has served as a carrier of acid.

An appreciation of the preceding point of view will make it easier to understand what has seemed to many like a physiologic paradox. We are assured that conditions of acidosis, that is, undue production of acid, may arise in the organism, and yet the real acidity or reaction of the blood as indicated by its hydrogen ion concentration may remain essentially unaltered. The excess of acid is in large measure lost by the regulatory devices of the kidney. Nevertheless, there are demonstrable effects of acidosis in the blood, particularly in the extreme form in which it may be encountered in diabetes, in which pathologic appearance of unusual and abnormal products of metabolism occurs. The chemists at the Hospital of the Rockefeller Institute for Medical Research, Drs. Van Slyke, Stillman and Cullen,[2] have demonstrated that, while in acidosis the hydrogen ion concentration of the blood may not be altered, its reserve alkalinity (ability to retain normal reaction despite addition of acid) is decreased, and that the decrease can be measured by a variety of methods. For example, normal serum binds about 75 per cent. of its volume of carbon dioxid. In diabetic acidosis, the capacity to hold this acid product of metabolism in solution may become as low as 20 per cent. Similarly, although the hydrogen ion concentration (or acidity) of untreated blood plasma itself is about the same in normal condition and in acidosis, in the latter condition, as follows from the reasoning of L. J. Henderson, the ability of the blood to maintain its reaction when treated with acid must be lowered. This is actually demonstrated by the newer results. Addition of a volume of fiftieth-normal hydrochloric acid to ordinary plasma of healthy individuals gives a practically neutral solution. Plasma from patients in acidosis becomes acid under the same treatment. The regulation and the supply of alkali are no longer adequate. The loss of "reserve alkalinity" betrays itself, even in the blood, when careful methods of investigation, of which these are illustrations, are employed.

1. We have quoted liberally in this discussion from the paper presented at the Eighth International Physiological Congress at Vienna, September, 1910, by L. J. Henderson: A Critical Study of the Process of Acid Excretion, Jour. Biol. Chem., 1911, ix, 403.

2. Van Slyke, D. D.; Stillman, E., and Cullen, G. E.: The Nature and Detection of Diabetic Acidosis, Proc. Soc. Exper. Biol. and Med., 1915, xii, 165.

THE RELATION OF SELECTIVE TISSUE AFFINITY TO INFECTION

In our conception of an infectious process, the fact that many pathogenic bacteria possess a predilection for certain tissues is fundamental. Koch and his associates recognized this important factor, and formulated laws for the study of the etiologic relationship between bacteria and disease whereby the causative agents in many infectious diseases have been determined. Furthermore, it has been observed that at some time during the course of most infections there is a bacteremia. This condition is usually of short duration, and the bacteria rapidly become localized in some certain part of the body, giving rise to pathologic changes quite often characteristic of the invading organism. For example, in lobar pneumonia the pneumococcus enters the blood stream and localizes in the lungs, while in typhoid fever *Bacillus typhosus* holds a definite predilection for the lymphoid elements of the gastro-intestinal tract and spleen. In these and many other infectious diseases, the invading organisms may exhibit marked variations in virulence, but their specificity for particular tissues is quite constant.

On the other hand, there are many species of bacteria, such as the streptococcus group, which may invade almost any tissue of the human body and give rise to a great variety of pathologic changes. In recent years, evidence has been advanced which indicates that, even among these bacteria, different strains may have a very marked tissue affinity. As early as 1902, Forssner[1] recognized such a possibility. He found that streptococci obtained from various sources, when grown artificially on kidney tissue or in extracts of that tissue, would localize in the kidneys of animals when injected intravenously. But the great importance of this elective tissue affinity in infections with

1. Forssner, G.: Nord. med. Arch., 1902, p. 1.

this group of bacteria was not recognized until many years later. Rosenow,[2] using special methods, has isolated streptococci from the pathologic lesions in such diseases as acute rheumatic arthritis, cholecystitis, appendicitis, gastric and duodenal ulcer, herpes zoster and erythema nodosum. These streptococcus strains were low in virulence and similar to each other in morphologic and cultural characteristics; but when injected into animals, each strain tended to localize electively in the tissue from which it was isolated. Also, streptococci with similar tissue predilection were isolated in many instances from such probable infection atria as the tonsils, the sinuses and pyorrhea pockets. These organisms when first isolated were usually highly specific for certain tissues; but by frequent animal passage or cultivation artificially, this specificity was lost, and a new tissue predilection was acquired. Thus, the appendix strains, at first highly specific for the appendix, rapidly lost this characteristic on animal passage, and invaded the walls of the stomach and gallbladder. It is worthy of note also that in these various streptococcus infections, produced by different strains, there was in most instances some involvement of the joints. This observation supports the view that the vascular anatomy of the joints is an important factor in the production of acute infective arthritis.

The results of these experiments emphasize the importance of foci of infection as places in which bacteria may grow and acquire elective pathogenic properties which determine their mode of action and distribution after their entrance into the blood stream. In these foci the changing biochemical properties of the tissues, which affect the cultural conditions, are probably very important factors in the development of new pathogenic characters, and on this basis, elective tissue affinity can best be explained. Different tissues present various opportunities for the growth of bacteria during life, owing to their peculiar metabolism, which modifies their chemical composition. Experimental evidence in support of such a view has been advanced by many investigators. Thus Flexner[3] observed that the *Bacillus pyogenes filiformis* invaded certain tissues almost constantly, and under artificial conditions grew more luxuriantly in the same tissues. Again, bacteria when grown in certain tissues artificially tend to localize in these tissues when injected into animals. It is rational, therefore, to assume that different tissues are probably invaded by bacteria which can live and grow in their special chemical environment. Other factors, such as trauma and virulence of the invading organism, probably influence to a certain degree the extent and mode of infection.

Since different strains of streptococci may acquire predilections for widely different tissues under varying environmental conditions, it is not illogical to expect similar changes in other groups of bacteria. Investigation along these lines may greatly increase our knowledge of such bacteria as the diphtheroid bacilli, the colon group, and the Gram-negative diplococci whose pathogenic properties are so little understood.

2. Rosenow, E. C.: The Newer Bacteriology of Various Infections as Determined by Special Methods, THE JOURNAL A. M. A., Sept. 12, 1914, p. 903; Bacteriology of Cholecystitis, and Its Production by Injection of Streptococci, Nov. 21, 1914, p. 1835. Rosenow, E. C., and Oftedal, Sverre: The Etiology and Experimental Production of Herpes Zoster, June 12, 1915, p. 1968. Rosenow, E. C.: Jour. Infect. Dis., 1915, xvi, 240. Rosenow, E. C., and Sanford, A. H.: Ibid., xvii, 219.
3. Flexner, Simon: Jour. Exper. Med., 1896, i, 211.

OBSERVATIONS ON THE ACTION OF ARSENIC COMPOUNDS

It has been customary, if not imperative, to speak in rather general terms regarding the action of arsenic compounds. This is true whether the remark be applied to arsenicals as drugs or as poisons. What is meant by this statement may be made clear by an illustrative quotation: Arsenic poisoning is said to lead to "a chain of obscure symptoms which have their expression through the perverted functions incident to general toxic action on the tissue protoplasm." Whatever significance a statement couched in such general terms may have, it falls far short of that definiteness which clearly correlates cause and effect, and which locates pathologic disturbances with anatomic precision. It is helpful, of course, to know that arsenic compounds disturb metabolism and act as general protoplasmic poisons. The future, however, ought to reveal the details of their pharmacodynamic behavior.

The introduction by Ehrlich of synthetic compounds of arsenic as specific poisons for certain infectious organisms gave an impetus to progress in the pharmacologic investigation of arsenic. As an illustration may be mentioned the recent studies of Brown and Pearce[1] of the suprarenotropic action of arsenic. Observations on more than sixty compounds, including such substances as arsenous acid, arsenic acid, sodium cacodylate, atoxyl, arsacetin, arsenophenylglycin, salvarsan and neosalvarsan, have shown that, without exception, toxic doses of all these arsenicals produce definite lesions of the suprarenals. The suprarenotropic action of all compounds of arsenic is not equally great or identical in character, but the lesions produced by a given compound in a given animal species are quite constant, and in some instances are the dominant pathologic manifestations of the toxic action of the compounds. The essential features of this action involve vascular changes in the suprarenal, alterations in the lipoid content, cellular degeneration, and the effect on the chromaffin. Brown and Pearce note that the latter feature is of especial interest. Some compounds seem to exercise only slight influences on the chromaffin content of the suprarenals, while others, such as sodium cacodylate, salvarsan and neosalvarsan, cause a rapid and marked decrease in this substance. Whether or not the effect of thera-

1. Brown, W. H., and Pearce, Louise: On the Pathological Action of Arsenicals upon the Adrenals, Proc. Nat. Acad. Sc., 1915, i, 462.

peutic rather than toxic doses of arsenic compounds is exhibited in a definite stimulation of the suprarenal glands remains to be seen. Such a suprarenotropic action is, of course, strongly suggested by these new findings.

Arsenic compounds are familiar causes of renal lesions. In view of the supposed behavior of arsenic as a "capillary poison," the nephritic defects engendered by it have usually been classed as vascular lesions. They are exemplified in the hemorrhagic kidney produced by arsenous acid. At the Rockefeller Institute for Medical Research, Pearce and Brown[2] have demonstrated that the kidneys of animals given lethal doses of such substances as arsenous acid, salvarsan, neosalvarsan, arsenophenylglycin, atoxyl and arsacetin are separable into two extreme groups, the red and the pale kidneys, with transitional types in which the predominating changes ally them more closely with the one group or the other. In the group of red kidneys, congestion and hemorrhage are the dominant features of the arsenic action, while in the pale kidneys, the dominant lesion is tubular. At the one extreme is the congestion and hemorrhage produced by arsenous acid — a pathologic condition diffuse in character with only slight tubular necrosis. The other extreme in the action of arsenicals on the kidney is exemplified by arsacetin, which produces a typically pale kidney. While congestion and hemorrhage are still apparent to a minor degree in the boundary zone of these kidneys, the vascular injury is so completely overshadowed by the injury to the tubular epithelium as to leave no doubt as to the dominance of tubular injury. Further, the prompt and vigorous regeneration of the tubular epithelium indicates that the extensive necrosis produced by arsacetin cannot be regarded as a secondary anemic phenomenon.

The arsenic group of poisons has clearly been shown by Pearce and Brown to include agents which produce a so-called tubular nephritis as well as those producing a vascular nephritis. These wide differences in the pathogenic action of different compounds of arsenic are explainable only on the basis of their chemical constitution.

2. Pearce, Louise, and Brown, W. H.: Variations in the Character and Distribution of the Renal Lesions Produced by Compounds of Arsenic, Proc. Nat. Acad. Sc., 1915, i, 463.

Laboratories and Research.—Laboratories and discoveries are correlative terms. If you suppress laboratories, physical science will be stricken with barrenness and death, it will become mere powerless information instead of a science of progress and futurity; give it back its laboratories and life, fecundity and power will reappear. . . . Ask that they be multiplied and completed. They are the temples of the future, of riches and of comfort. There humanity grows greater, better, stronger. There she can read the works of Nature, works of progress and universal harmony, while humanity's own works are too often those of barbarism, of fanaticism and destruction.—Louis Pasteur.

Current Comment

"LOCAL INDUSTRIES AND THE SOFT PEDAL"

Two weeks ago THE JOURNAL, under the title quoted above, called attention to a peculiar situation that developed in Rochester, N. Y., relative to a lecture that was to be given before the American Public Health Association on "The Patent Medicine Fraud" by a physician connected with the Department of Health of New York City. In the apparent fear that the speaker who was to turn the light on the "patent medicine" business might refer to the local industries in that line, a Rochester physician wrote to the New York Health Department intimating that a discussion of local frauds would be undesirable. For a while the place the lecture would have on the program was in doubt. After some correspondence between the health commissioner of New York and some of the members of the local program committee of the American Public Health Association, a place was finally found for the lecture. It was delivered the night before the American Public Health Association convened. Naturally, the lecturer mentioned the two most widely advertised "patent medicine" frauds emanating from Rochester — "Duffy's Malt Whiskey" and "Warner's Safe Remedy." The lecture was well attended and from all reports was appreciatively and enthusiastically received by the audience. What did the Rochester newspapers do about it? Some of them practically ignored it. The others gave a general report of the lecture but carefully avoided mentioning by name any of the nostrums with which the lecturer dealt. Ordinarily, one would suppose that a specific denunciation of an important local industry would be considered news and, according to all the tenets of newspaper faith, it *is* news. So far as the newspaper-reading public of Rochester is concerned, however, unless it receives its information from other sources,[1] it will never learn that "Duffy's Malt Whiskey" and "Warner's Safe Remedy" were explicitly and definitely denounced in a public meeting held in their own city under more than ordinarily auspicious circumstances. The damper pedal was successfully depressed. Whose was the foot?

THE LOVE OF HEALTH

If any one doubts that this is an era of health propaganda he must, indeed, be oblivious of what is going on about him. Municipal, state and national agencies are using forces and funds at their disposal to further the interests of public hygiene. Educational influences are directing their energies to the spread of the lessons of procurable health in public print and in documents of both official and unofficial character. Novels and short stories, the literature of biography and travel, the platform and even the pulpit are proclaiming the gospel of health far and wide. The medical profession, more enthusiastic if not more vitally interested than any other group

1. The subject was dealt with in detail by Samuel Hopkins Adams in the New York *Tribune*, Sept. 19, 1915. Some of this article is quoted in the Propaganda department of this issue.

in the promotion and outcome of the modern hygienic movement, may well stop from time to time to inquire about the sanity of the methods of the propaganda. The religious doctrine of past ages involved the threat of harm; it inculcated a fear of the destruction or danger that was sure to follow the violation of the law. This dismal attitude has long since been replaced by a religion of love, of uplift and joyous anticipation. In the health propaganda, likewise, much of the pessimistic attitude, unconsciously perhaps, has been introduced in the past. The fear of disease has been held over the heads of the people. Rarely have we seen the more appropriate spirit of the modern "better health" movement better expressed than in a recent pamphlet of the Life Extension Institute. "It is not a fear of illness or of death that we should encourage, but a love of health, a sense of responsibility for the care of our bodies, a desire for bodily endurance and efficiency and full achievement. If the mind is fixed on these ideals, and the already known means of approaching them are utilized, the needless miseries that embitter the lives of so many may be left to take care of themselves. It is not so much necessary to fight disease as to cultivate health for the happiness, contentment and moral gain that it brings."[1] There is something unusually optimistic and buoyant in such words. They embody the psychologic cue to comfort and happiness for many a patient, without implying that "man is incapable of sin, sickness, and death," or that "health is not a condition of matter, but of mind." To inspire a love of health does not mean to exclude the great body of scientific knowledge which is the best that science can offer today regarding disease, or to replace medicine by crude metaphysics. The ardent love of health insures a mind receptive to the lessons of modern medicine.

COUNTING THE WORLD'S COST

In these days of nearly world-wide conflict between nations, it is reassuring and comforting to know of one campaign in which all civilized nations are allies in a common cause. The neutrality of science has been a subject of frequent comment, especially during the past year. The fight between the human race and disease is carried on without regard to diplomatic agreements or international boundary lines. Probably the only organizations or institutions in existence today which are carrying on their work regardless of warring nations are those engaged in scientific work. Of these, the International Office of Hygiene in Paris is perhaps the most conspicuous example. The British representative, Dr. R. W. Johnstone, now acting as official epidemiologist of the international office, has just issued a report showing the progress of plague, cholera and yellow fever throughout the world, as shown by the reports received and tabulated at the Paris office. This report is complete for 1913, the 1914 material having not yet been completed. According to this report, bubonic plague prevailed to some extent in 1913 in almost every part of the world, there being as yet no evidence that the present world-wide epidemic of this disease, which started about twenty years ago, has begun to subside. A marked decrease was shown in India, where, in 1911, there were 846,873 deaths from this disease, while in 1913 there were only 217,148. On the other hand, the reports for 1914, so far as received, show an increase. Cholera was also less prevalent in India in 1913 than in previous years. There were no serious epidemics of yellow fever during the year in any part of the world. As the London *Lancet* well says, in commenting on Dr. Johnstone's report, these annual summaries possess more than a passing interest. They place on permanent record many facts, the true value of which is more likely to be recognized in the future than at the present time. They will be of service as works of reference to future students of bubonic plague, when the great pandemic now prevailing has spent itself and disappeared. The same remark holds good as regards cholera and yellow fever, both of which may before long, we hope, come to be placed on the list of disappearing diseases. The time will come, as scientific knowledge increases and its more thorough practical application becomes possible, when the only knowledge the human race will have of these diseases, which have devastated mankind since the dawn of history, will be the records of past epidemics. Our knowledge of such epidemics in previous generations is vague, and is based largely on general statements. Definite records from year to year of the gradual decrease of preventable diseases will be of the greatest scientific and historic value to future generations.

1. "Keeping Young," Monthly Health Letter 15 of the Life Extension Institute.

FLIES AS A CAUSE OF INFANT DIARRHEA

Modern public health work is necessarily a mixture, in varying proportions, of practical sociology and applied public hygiene. Today, when cooperation and economy in administration are being sought for in all lines, it is not strange that a combination of practical philanthropists and public officials should be regarded as desirable in attacking a social problem. An excellent illustration of such cooperation is to be found in the study of the relation between flies and diarrheal disease in infants, being made under the joint direction of the Bureau of Public Health and Hygiene of the New York Association for Improving the Condition of the Poor, and the Department of Health of New York City. A report of the second year's investigation on this subject is a valuable contribution to our knowledge regarding the relationship between flies, dirt, feeding and diarrheal diseases among infants. The problem, as stated in the report, involves an effort to answer the following questions:

Is the house fly the chief carrier of diarrhea to New York babies, or has it more deadly rivals?

Should some of the energy now expended in fly swatting be diverted to other details of home hygiene, or should the hue and cry after this insect pest be redoubled in volume?

Do the fly-exposed infants suffer more than the infants in dirty homes, or than infants who are artificially fed?

In a word, the object of the two years' inquiry is to determine the relative importance of the fly in the causation of infant diarrhea. We shall not attempt

to discuss in detail the many interesting facts presented, the tabulations given and the methods of investigation and education followed. The conclusions, as summarized in the report, show that almost twice as many infants have diarrhea among fly-exposed as among the fly-protected infants, and that almost twice as many infants have diarrhea in dirty homes as in clean homes. On this showing, the relative importance of flies and dirt in the production of this disease seems to be about the same. Artificial feeding, however, was found to be a more important factor than either of the others. Almost two and one-half times as many infants were attacked by diarrhea among artificially fed as among breast-fed infants. If it had not been for careful selection of food and instruction to mothers, the proportion of cases among artificially fed infants would have been even higher. As it is, the influence of flies and dirt combined is of about the same importance as artificial feeding alone in the production of this disease. Artificial feeding and dirt combined are responsible for a still larger percentage of the cases, three and one-half times as many artificially fed infants in dirty homes being attacked as in the case of breast-fed infants in clean homes. While the report shows that flies form one of the three main causes for diarrheal diseases among infants, and constitute one of the two lesser causes out of the three, the demonstration that twice as many infants are the subject of diarrheal diseases among fly-exposed as among fly-protected infants is ample justification for continued prosecution of the antifly campaign. The ideal condition for the reduction of the infantile death rate to the minimum is breast feeding in a clean and fly-protected home for each baby.

WHERE THE BLAME LIES

Elsewhere in this issue[1] is given some information regarding a nostrum that for years has been advertised to — and of course prescribed by — the medical profession. The article closes with this sentence: "That physicians have for years tolerated a nostrum like 'Micajah's Uterine Wafers' is an unfavorable commentary on the medical profession." As the percentage of physicians who prescribe this nostrum is undoubtedly extremely small, and consists of the unthinking or the uneducated, why, it may be asked, should the medical profession as a whole be blamed? Because the medical profession as a whole continues to support — either by contributing to, or by subscribing for — medical journals that carry advertisements that make the continued existence of such products possible.

1. **Piso's Tablets and Micajah's Wafers, Propaganda for Reform,** THE JOURNAL, this issue, p. 1128.

Trailers for Ambulances.—The British military authorities have adopted a trailer ambulance to be attached to any motor car by means of an ordinary drawbar, instead of converting passenger motors into ambulances. Attachments have been fitted to every military motor car so that they may pick up one of these trailers and convey it to the hospital in the rear. The trailer is said to be of great use to the hospital corps.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

People to Decide on Tuberculosis Hospital.—The supervisors of Kane County, on September 19, decided to secure an option on the Dodson property in Geneva Township as a site for the county tuberculosis sanatorium and to leave the question of the establishment of the institution to the voters of the county at the April election.

Personal.—Dr. Charles O. Nelms has been appointed local surgeon for the Illinois Central R. R. at Herscher.——Dr. J. Forrest Bell, Elgin, was knocked down and seriously injured by a bicycle September 15.——Dr. William S. Williamson, Galesburg, was operated on in the Galesburg Hospital August 30, for an abscess of the abdominal wall, and is reported to be doing well.——Dr. Louis Ostrom, Jr., has filed his bonds for $25,000 as treasurer of the medical board in control of the Rock Island Municipal Tuberculosis Sanatorium.

Chicago

Personal.—Dr. Thomas J. Williams has returned after eight months' service in war hospitals in England.——Dr. Joseph C. Springer, coroner's physician, fell down the steps of his house September 15, sustaining severe injuries.——Dr. Herman C. W. Gresens was seriously bruised in a collision between automobiles, September 16.——Dr. Sydney Walker, Jr., has returned after four months' service with the British forces in Flanders.

MICHIGAN

Personal.—Dr. Charles C. Clancy, Port Huron, has been elected Great Medical Examiner of the Catholic Mutual Benevolent Association.——Dr. B. F. A. Crane, Saginaw, who has been seriously ill with ptomain poisoning, has returned home convalescent.

Laboratory Expert for Detroit.—At the meeting of the Detroit City Council, August 31, the Board of Health was authorized to employ a laboratory expert as head of the Pasteur Institute, and also to make the Wassermann and other tests that might be required. J. B. Kelly, Ann Arbor, has been elected for the position.

Tuberculosis Notes.—At the annual meeting of the Saginaw Anti-Tuberculosis Society, September 14, Dr. John T. Sample was elected president.——Dr. Arthur F. Fischer, Hancock, was elected president; Dr. Henry J. Hartz, Detroit, treasurer, and Dr. Herman Ostrander, Kalamazoo, chairman of the executive committee of the Michigan Anti-Tuberculosis Association. Drs. Collins H. Johnston, Grand Rapids, Victor C. Vaughan, Ann Arbor, and John H. Kellogg, Battle Creek, were elected members of the executive committee of the association.——The Open Air Cottage at Ottawa Beach, maintained by the Grand Rapids Anti-Tuberculosis Society, was closed August 28.——The Kalamazoo Tuberculosis Sanatorium, built last year at a cost of $30,000, has cared for 104 patients during the year.——Muskegon County opened a sanatorium last year with a capacity for ten patients. At present there are four patients in the institution.——Marquette has the only tuberculosis sanatorium in the Upper Peninsula. The institution was built to accommodate twenty patients, but it now has thirty. A total of 176 patients have been cared for since the opening of the sanatorium. ——Ingham County Sanatorium for tuberculosis patients was built by the county of Ingham and city of Lansing jointly in 1913, at a cost of $15,000. It has a capacity for ten patients, and more than forty patients have been under treatment since the building was opened.——Waxford and Barry counties are the first counties in the state to have a tuberculosis survey. This will begin on October 1, and the investigators will canvass the counties, count the cases of tuberculosis, note the varieties, and suggest to the supervisors how they can cooperate with the State Board of Health in corrective measures.

MINNESOTA

Dispensary Opened.—The University of Minnesota dispensary which was formerly located at Seven Corners, St. Paul, was reopened in new quarters in the basement of

Millard Hall on the University of Minnesota campus, Minneapolis, September 4.

Ground Broken for Hospital.—The ceremonies of ground breaking for the Maternity Hospital, Minneapolis, took place September 7, when the granddaughter of the late Dr. Martha Ripley, founder of the hospital, turned the first spadeful of dirt for the new $50,000 main building of the hospital.

Personal.—Dr. Marius J. Jensen, Minneapolis, sustained severe cuts on the head in a collision between his automobile and another motor car, September 10.——Dr. Robert H. Mullin, director of the laboratory of the State Board of Health, and assistant professor of pathology and bacteriology in the University of Minnesota, Minneapolis, for the last eleven years, has been placed in charge of the hygienic laboratory of the University of Nevada, Reno.——Dr. J. P. Heibert, Minneapolis, has been appointed assistant instructor in the department of surgery of the University of Minnesota.

Hospital Notes.—Drs. Andrew J. Gilkinson and William H. Hengstler have rented a suite of rooms in the Caughren Block, Osakis, which they are fitting up as a private hospital.——The subscribers to the Lake City Hospital fund met July 22, and reported that $12,500 had already been subscribed, that the Greer property on South Main Street had been purchased for the hospital and the deed will be turned over to the Hospital Association immediately on its incorporation.——It is planned to spend about $8,000 for improvements and the remodeling of the More Hospital, Virginia. ——Construction work on the hospital for the Minnesota Steel Company at Morgan Park has been commenced. The institution will cost about $100,000.——The new hospital building at the Red Wing Training School will be ready for occupancy this fall.

Public Health Conference.—The Minnesota Public Health Association and Minnesota Sanitary Conference will hold a combined meeting at Rochester, September 29, holding sessions in the morning, afternoon and evening. The chief topics for discussions are to be: "Study of an Epidemic of Appendicitis and Parotitis," "The Clean Milk Problem," "Chronic Pathologic Changes of Middle Life," "Community Control of Tuberculosis," "School and Municipal Health Nursing," "The Control and Prevention of Typhoid Fever" and "The Newer Public Health and Minnesota Health Needs." The last topic will be presented by President George E. Vincent of Minnesota and Governor Winfield S. Hammond, the latter of whom has issued a recommendation urging nurses, health officers, and all those in authority to attend the conference in order that plans may be laid to reduce to the minimum the annual toll of victims in the state.

NEW JERSEY

New Health Rules.—At Newark the ordinances prohibiting the selling of "dipped" milk by stores other than regular milk depots handling only milk and milk products, and requiring that children under 10 years of age suffering from whooping cough must wear, on the arm, a yellow band containing the name of the disease, went into effect September 1.

Osteopaths Denied Rule.—Supreme Justice Carrison has refused the application for a restraining order to enjoin the New Jersey State Medical Examiners from demanding personal examinations of osteopaths. The osteopathic physicians are trying to compel the New Jersey State Board of Medical Examiners to issue licenses to practice osteopathy under the Act of 1915.

Work Begun on Laboratory.—The Rockefeller Foundation for Medical Research has begun work on the construction of a laboratory near Princeton for the study of animal diseases. The ground, buildings and equipment of the laboratory will cost about $1,000,000, and the institution will be in charge of Dr. Theobald Smith, professor of comparative pathology in Harvard Medical School.

Personal.—The advisory board of the Trenton municipal colony has been organized with Dr. George N. J. Sommer as chairman and Dr. Paul E. Kuhl as secretary.——Dr. Maurice D. Youngman, Atlantic City, was thrown from his automobile at Margate City, August 11, and seriously injured.

Noted Chemist Dies.—Thomas Bliss Stillman, one of the best known chemists of the United States; professor of analytical chemistry at the Stevens Institute, Hoboken, for thirty-five years; a member of many American and foreign scientific societies and the author of a standard textbook on engineering chemistry; chemist to the medical milk commission of Newark, and city chemist of Jersey City and Bayonne, died at his home in Jersey City, August 10, from heart disease, aged 63.

NEW YORK

Personal.—Dr. John F. Fairbairn, Buffalo, sustained painful injuries by the overturning of his automobile near Ridgway, September 10.——Drs. Marcus B. Heyman, Central Islip, and Joseph H. Marshall, Southland, have been elected members of the board of managers of the Suffolk County Tuberculosis Hospital.

Rabies.—Oneida County has been quarantined on account of rabies, while the adjoining county of Herkimer has raised the quarantine. Dr. W. G. Hollingsworth protests against the efforts of hunters to have the dog quarantine raised and says it is futile to have quarantine in one county while an adjoining county is open. He says the only way to stamp out rabies is to adopt the Australian plan of holding every dog that enters the country ten days for the development of symptoms. This has stamped the disease out in Australia.

Test Right to Sterilize Defectives.—An action has been begun before Supreme Court Justice Rudd by Attorney-General Woodbury to determine the right of the state to sterilize defectives. The individual on whom the state procreation commission proposed to perform the operation is a young man, 22 years of age, one of a family of sixteen, all practically defective. To date it has cost the state $10,000 for hospital care and maintenance of this family. On the decision in this case depends whether the procreation commission will enter on its work of sterilizing mentally defective persons in this state.

New York City

Personal.—Dr. Elizabeth J. Van Slyke, who has been serving with the American Red Cross in France and Belgium, has returned to this country.——Dr. Cyrus J. Strong sailed for Bordeaux on September 4.——Dr. Charles E. Hammack and Dr. David M. Bloom have been appointed bacteriologists in the bureau of laboratories of the department of health.

Error in the City Death Rate.—The health department has been computing the death rate by accrediting the city with a growth of 1,100,000 in five years, while the recent state estimate shows an increase of but 300,000, thus the computations of the health department have been based on an estimated population exceeding the actual population by nearly 800,000. This error makes the estimated death rates lower than they actually are and affects all the computations of the health department.

Output of Milk From Straus Milk Stations.—The output of milk from the eighteen Nathan Straus milk stations in this city for the year ended August 31 amounted to 2,175,208 bottles. In addition to this there were 1,441,580 glasses of pasteurized milk served at the stations in the parks and recreation piers during the three summer months. This completes the twenty-fourth year of distributing pasteurized milk to the babies of the city and the total number of bottles supplied in that time was 39,000,000, besides 21,500,000 glasses of milk during the summers.

NORTH CAROLINA

Typhoid Vaccine.—Dr. C. A. Shore of the State Laboratory of Hygiene reports that during July 137,000 doses of antityphoid vaccine valued at more than $68,000 were sent out by the laboratory for free treatment.

Pellagra.—At Winston during August, eight deaths from pellagra occurred, while there were only six from tuberculosis. This is the first time in the history of the city that the deaths from tuberculosis were exceeded by those of pellagra.

Sanitary Camps for Prisoners.—The State Board of Health and the State Highway Commission acting together have prepared a set of plans and specifications embracing a new system for portable camps for convicts employed outside. Copies of the plans have been placed in the hands of the superior court judges, solicitors, county officials and others interested. The State Board of Health announces that it will soon be ready to report on all state and local convict camps or prisons, and a systematic record will be kept with a standard score for the various points concerned in the making of a sanitary convict camp or prison.

Hospital Notes.—During the year improvements were made to the Rex Hospital, Raleigh, amounting to $25,000.——At a meeting of the Board of Directors of the Mercy Hospital, Durham, it was decided to file a voluntary petition in bankruptcy.——A campaign is being conducted for the establishment of a hospital in Greensboro for the treatment of negro patients.——The Mary Elizabeth Hospital of Raleigh

has been incorporated with a capital stock of $25,000.——The New Mission Hospital, Asheville, erected as a result of a whirlwind campaign, in which $30,000 was contributed, is almost ready for occupancy. The building contains thirty rooms for patients, with diet kitchens and three storage rooms. It is hoped that the institution may be formally opened by November 1.

OHIO

Personal.—Dr. B. B. Neubauer, Cleveland, has returned after several months' service with the American Ambulance, Paris.——Dr. George O. Maskey, Upper Sandusky, has been taken to Mount Carmel Hospital, Columbus, to undergo an operation.——Dr. George M. Logan, Akron, was seriously injured by an explosion of gas in the basement of his home September 12.——Dr. Howard W. Arndt, Lone City, was seriously injured when his automobile was struck by a Baltimore and Ohio train September 2.——Dr. Roy G. Pearce, associate in physiology in the Western Reserve University, Cleveland, has been appointed assistant professor of physiology in the College of Medicine of the University of Illinois, Chicago.

Changes in Cleveland Hospitals.—The following changes and new additions are being made in Cleveland hospitals: At the German Hospital an addition to provide 85 to 100 beds, doubling the present capacity, is being completed, which will cost, without equipment, $35,000.——An addition to Charity Hospital to cost $250,000 will increase the capacity from 135 to 265 patients.——The new Mt. Sinai Hospital will provide 225 additional beds at an estimated cost of $600,000.——St. John's Hospital will have a capacity of 250. This will necessitate an expenditure of $250,000.——The new Lakewood Hospital will have a capacity of 55 beds and will cost $100,000.——Mt. Sinai Hospital will be completed and ready for occupancy next July; St. John's new hospital and the additions to the German and Charity hospitals, it is expected, will be ready for use this fall. Efforts are also being made to complete the Lakewood Hospital before cold weather.

Department of Health and Sanitation.—The Board of Trustees of Ohio University, Columbus, have authorized the establishment of a department of public health and sanitation, which has been organized with the following appointments: Eugene F. McCampbell, M.D., professor of preventive medicine, and head of the department; Robert G. Patterson, A.B., A.M., assistant professor of public health; Emery R. Hayhurst, M.D., assistant professor of industrial hygiene; William H. Dittoe, C.E., instructor in public health engineering; Frank G. Boudreau, M.D., instructor in public health and sanitation; Lear H. Van Buskirk, B.Sc., instructor in public health laboratory methods. A description of the courses, which have already been laid out and approved by the Graduate Council, University Faculty and Board of Trustees, is contained in the *Ohio Public Health Journal*, August, 1915. The principal object of the course is said to be to prepare young men and women for administrative and executive positions as health officers or members of boards of health, secretaries, agents, inspectors, etc., of health organizations, affording a scientific groundwork for efficient health administration. Graduates in medicine of the Ohio State University and other recognized medical schools will be admitted to the courses on their records and registered as candidates for the degree of Master of Science in Public Health. There are other admission privileges and requirements.

OREGON

Personal.—Dr. Maximilian F. Clausius, government physician at Siletz agency, who has been ill with gastric ulcer for several months, was operated on August 12, at the Good Samaritan Hospital, Portland; a gastro-enterostomy was performed and Dr. Clausius is reported to be making good progress toward recovery.——Dr. David N. Roberg has been appointed state health officer, succeeding Dr. Calvin S. White.

State Association Meeting.—The forty-first annual meeting of the Oregon State Medical Association was held in Portland, September 9 and 10 under the presidency of Dr. Alpha E. Rockey, Portland. The following officers were elected: president, Dr. William Kuykendall, Eugene; vice presidents, Doctors Robert C. Yenney, Portland, Barney Ferrell, Bend, and Harvey J. Clements, Salem; secretary, Dr. Marcus B. Marcellus, Portland, reelected; treasurer, Dr. Katherine C. Manion, Portland, reelected; delegate to the American Medical Association, Dr. Walter T. Williamson, Portland, reelected; alternate, Dr. Joseph A. Pettit, Portland; councilors, Doctors Clarence J. McCusker, Portland, and Robert J. Pilkington, Astoria; and associate editors of *Northwest Medicine*, Drs. William House and Calvin S. White, Portland.

PENNSYLVANIA

Tuberculosis Home Opens.—The new buildings of the department for the treatment of tuberculosis of Allegheny County at Woodville, Pittsburgh, were dedicated September 2. The camp is situated on a hill about a mile from the main buildings of the county home.

Danville Dedication Forbidden.—On account of the epidemic in Danville, on September 15, Dr. Samuel G. Dixon, the state health commissioner, has ordered that the dedicatory exercises of the Geisinger Memorial Hospital and the citizens' testimonial celebration, scheduled for next week, be postponed. There are 132 cases in the State Hospital and 41 in the town of Danville.

Harrison Act Upheld.—Judge Dickinson of the United States District Court, in an opinion filed September 16, sustained the Harrison antinarcotic law. The constitutionality of the act was attacked by an attorney for a physician who is charged with indiscriminately dispensing narcotic drugs and with perjury. The action was tried by Judge Dickinson, who regards the act constitutional.

Typhoid at Norristown Asylum.—An outbreak of typhoid fever has occurred at the State Hospital for the Insane, Norristown where there are a dozen cases among the men and women patients, and there have been two deaths. The source of the infection has not been determined. The water supply is furnished by artesian wells sunk on the premises and the milk is obtained from the hospital herd.

Malaria.—The discovery of three cases of malaria at Trotter in the Connellsville region has led to an investigation by the state health commissioner. Malaria had not appeared in this neighborhood for many years, and malarial mosquitoes have not been found nearer than Pittsburgh, and in the eastern part of the state along the Delaware and Susquehanna rivers. One of the victims it is said suffered from malaria when a child while living along the Potomac River in Maryland.

Infantile Paralysis.—At Erie it was reported September 7 that there were six new cases of infantile paralysis, making forty-four since August 1 and fifty since January. A state health inspector and a representative from the Rockefeller Institute were making an investigation. All children under 12 were excluded from picture theaters and other public places of amusement. Members of the school board announced that the schools would not be closed unless the state officers considered it necessary.

Philadelphia

Personal.—Dr. Charles K. Mills, professor of mental diseases and neurology in the medical department of the University of Pennsylvania, has given up the chair to devote his time to his practice and to research work.——Dr. E. Oliva White sailed from San Francisco for Hawaii, September 1, to make a study of leprosy in the leper colony at Molokai.

Physician Indicted in the Drug Crusade.—As a result of the crusade waged by the Internal Revenue Department against physicians who had prescribed drugs outside of the legitimate course of their practice, Dr. Frank I. Cohen is said to have been indicted September 17 by the federal grand jury on 83 counts.

Sanitary Survey of Schools.—Every principal of a public school and the teachers as well, will be enlisted in a sanitary review of the schoolbuildings and their class rooms. Dr. John P. Garber, acting superintendent of schools, has entered the campaign for better and more healthful school buildings. In addition to the teachers there will be the assistance of fifty-eight inspectors and five supervisors.

Typhoid Outbreak in Suburbs of Philadelphia.—Infected milk is believed to be the cause of an outbreak of typhoid fever in the outskirts of Philadelphia. The first case developed about a week ago. Then in quick succession other persons were taken ill. The milk supply has been tested. It is believed that the water used in cleansing the bottles is infected and the germs are carried in this fashion. Twenty-five cases have been reported thus far.

TEXAS

Asylum Site Offered by San Antonio.—The city of San Antonio has offered to donate twenty acres of land as a site for the State Asylum for the Blind.

New Quarters for Medical Association.—The Bexar Medical Society formally opened its new quarters and library at San Antonio with a smoker, August 19.

State Quarantine to Remain at Galveston.—The State Board of Health on August 23, decided that state quarantine will be maintained at Galveston as before.

The Storm Loss in Houston.—The Harris County Tuberculosis Sanatorium was demolished in the storm which recently devastated Houston. Fortunately no patients were in the building.

Donation for Hospital.—The operating room in the proposed Robert Green Hospital at San Antonio at Bexar County is to be equipped by Alexander Joske at a cost of $10,000. The contract for the building has been awarded at a cost of $200,092.

Texas Cattle Fever.—Inspectors and officials of the state and federal livestock commissions are conducting a campaign of education in the vicinity of Paris and Ballenger on the eradication of the Texas cattle fever tick. Demonstrations are being made of the manner of dipping. Hog cholera is also receiving attention.

VIRGINIA

State Society Meeting.—The annual meeting of the Medical Society of Virginia will be held in Richmond, October 26 to 28.

Hospital Needs Funds.—The Virginia Hospital controlled by the city of Richmond, but operated by the Medical College of Virginia, has appealed for $17,000 to carry on its work.

State Society Meeting.—The council committee on advertising and enterprises of Richmond has voted to appropriate $1,000 to help defray the expenses of entertaining the Medical Society of Virginia which meets in Richmond, October 26 to 28.

WASHINGTON

Personal.—Dr. Samuel D. Cameron, North Yakima, has volunteered for service with the Canadian overseas forces and has been accepted by the assistant director of medical service.

Protest Against Closure of Laboratory.—The Public Service Commissioner and the State Health Commissioner of Washington are making urgent endeavors to have the order closing the State Chemical Laboratory at Seattle revoked. The closure of the laboratory means that the work of investigation of water supplies will have to close at a time when typhoid is prevalent and the work of the laboratory is consequently most valuable.

WISCONSIN

State Society Meeting.—The annual meeting of the State Medical Society of Wisconsin will be held in Milwaukee, October 6 to 8 with headquarters at the Hotel Wisconsin.

Eye, Ear, Nose and Throat Association to Meet.—The second annual meeting of the Wisconsin Eye, Ear, Nose and Throat Specialists will be held in Milwaukee October 8 and 9 under the auspices of the Milwaukee Oto-Ophthalmic Society. Dr. Nelson M. Black is president of the organization.

Health Station Opened.—The first municipal health station was opened in Milwaukee at the Cass Street School August 30. The station will be open Monday, Wednesday and Friday evenings from 7:30 to 8:30. Two physicians will be in attendance who will advise any poor people who apply as to the nature of any illness in the family and the proper course of procedure.

CANADA

Personal.—Dr. Herbert A. Bruce will leave France for Toronto in another month.——Dr. Herbert W. Baker, Toronto, is conducting the Private Hospital of Dr. J. Bryce McMurrich during the latter's absence with the Royal Army Medical Corps.——Dr. Laughlin Sinclair, Walkerton, Ont., a graduate of Ann Arbor University, and who has practiced in that town many years, is seriously ill in the Walkerton General Hospital.

Hospital News.—The Board of Education of Toronto has decided to allow the Hospital for Sick Children, Toronto, and the National Sanitarium Association to commence their annual collections amongst the school children on December 1. The former is to complete its collections on December 6 and the latter on the fifteenth of that month.——October 18 has been fixed as the day on which Military Camp at Niagara-on-the-Lake, comprising about 12,000 men, will start on a trek to their winter quarters in Toronto. The journey will consume six days. Lieutenant-Colonel Frederick W. Marlow, M.D., states that the hospital will be moved to Toronto as soon as the weather turns cold. It will there occupy the Women's Building at the Exhibition Grounds, and patients will be cleared daily in that building by train. Motor ambulances will be required for the removal of patients during the winter in Toronto as it is proposed to also occupy part of the old Toronto General Hospital. Colonel Marlow is calling for contributions for two motor ambulances.—— Through the generosity of Mr. and Mrs. J. K. L. Ross, Sydney, C. B., the Ross Convalescent Hospital for the naval forces has been established at the home of the donors. It has been thoroughly equipped with an operating room, public and private wards. The whole cost of maintenance of the entire establishment, matron, nurses and working staff and all supplies is provided by Mr. and Mrs. Ross. It is particularly designed for the care of the sick of the St. Lawrence Patrol. The donors will maintain the hospital until the end of the war without calling on the Canadian government for any financial assistance.

GENERAL

Meeting of Railway Surgeons.—The ninth annual meeting of the Minneapolis, St. Paul and Sault Ste. Marie Railway Surgical Association will be held in the Hotel Radisson, Minneapolis, Dec. 7 and 8, 1915.

Obstetricians and Gynecologists Hold Meeting.—The American Society of Obstetricians and Gynecologists held its twenty-eighth annual meeting in Pittsburgh, September 14 to 16, with headquarters at the Hotel Schenley. Dr. Charles L. Bonifield, Cincinnati, is president of the association.

Pellagra Conference.—The third triennial meeting of the National Association for the Study of Pellagara will be held in Columbia, South Carolina, October 20 and 21, under the presidency of Surgeon Claude H. Lavinder, U. S. P. H. S. The headquarters of the Association will be at the Jefferson Hotel, but the scientific sessions will be held in the amusement hall of the State Hospital for the Insane.

Warning Against Plague.—The United States Public Health Service issued a warning to port officials against bubonic plague September 15. It was urged that it will be necessary to exercise unusual precautions against the introduction of plague during the coming year, because many countries both in South America and Europe are infected. Quarantine officials in southern ports were particularly warned to watch arrivals from South America.

New Officers for Military Surgeons' Association.—The Association of Military Surgeons of the United States held its twenty-fourth annual meeting at the Raleigh, Washington, D. C., September 13 to 15 inclusive. Chicago was selected as the place of meeting for 1916 and the following officers were elected: president, Surgeon-General Rupert Blue, U. S. P. H. S.; secretary, Lieut.-Col. Edward L. Munson, M. C., U. S. Army; and treasurer, Major J. Harry Ullrich, M. C., Md. N. G.

Keen Establishes Fellowship.—Dr. William W. Keen, Philadelphia, has established the Corinna Borden Keen Research Fellowship in Jefferson Medical College, the income from which amounts now to $1,000.00. The gift provides that the recipient of the fellowship shall spend at least one year in Europe, or wherever he can obtain the best facilities for research in the line of work he shall select after consultation with the faculty, and that he shall publish at least one paper embodying the results of his work. Applications, stating the line of investigation which the candidate desires to follow, should be forwarded to Dr. Ross V. Peterson, Sub-Dean, Jefferson Medical College, Philadelphia.

Bequests and Donations.—The following bequests and donations have recently been announced:

Philadelphia Home for Incurables, $5,124.15.
Kensington Dispensary for Tuberculosis, $1,000, by the will of Enos R. Artman.
Philadelphia Aid Association of the Philadelphia Medical Association, $5,000, by the will of Eugene L. Santee.
Philadelphia Orthopedic Hospital, $60,000, by the will of Clementia Furniss.
Jefferson Hospital, Philadelphia, $15,000, as a contingent bequest under the will of Annie M. Wilson.

German Hospital, Philadelphia, $4,300, by the will of Elizabeth M. D. Prince.

Nursery and Child's Hospital, New York City, $1,500, by the will of John Howard Wright.

For erecting a hospital for drink habitues on Riker's Island, New York, a donation of $18,000 from John D. Rockefeller, Jr., and $10,000 from Mrs. W. K. Vanderbilt.

First Aid Conference.—At the recent meeting of the American First Aid Conference held in Washington, D. C., mention of which was made in THE JOURNAL of September 11, p. 965, the following resolution was adopted and sent to the president for his action:

WHEREAS, There is great lack of uniformity in first-aid methods, in first-aid packages, and in other first-aid equipment and in first-aid instruction, and

WHEREAS, Many of the aims of first aid are defeated thereby and needless suffering and expense incurred, therefore be it

Resolved, That this Conference recommends to the President of the United States that he appoint a "Board on First-Aid Standardization," said board to consist of one officer each from the Medical Corps of the U. S. Army, the Medical Corps of the U. S. Navy, the U. S. Public Health Service, the American National Red Cross, the American Surgical Association and the Association of Railway Chief Surgeons of America; this Board to deliberate carefully on first-aid methods, packages, equipment and instruction and to recommend a standard for each to a subsequent session of this Conference to be called by the permanent chairman; the creation and maintenance of the said Board to be without expense to the United States.

The foregoing resolution, presented by the committee on resolutions which consisted of Asst. Surg.-Gen. William C. Rucker, U. S. P. H. S., Major Robert U. Patterson, M. C., U. S. Army, representing the American Red Cross, and Dr. William S. Estes of the American Surgical Association was framed after advice from the legal department of the government and after a conference with the secretary to the president. The conference held a very successful meeting. About sixty were present, of whom chief surgeons of railroads formed the greater part. The conference was welcomed and given the official recognition of the government by Assistant Secretary of the Treasury Byron R. Newton. Drs. Harvey Cushing, Boston, and George W. Crile, Cleveland, gave lantern talks on their experience in the American Ambulance Hospital in Paris and at the front. The work of the conference will be published later in its transactions.

Conferences on Tuberculosis.—The National Association for the Prevention of Tuberculosis has called conferences at five points in the United States at which the ways and means of carrying on the war against tuberculosis during the coming year will be discussed.——The Southern Health Conference will meet in El Paso, Texas, September 27 to October 1. This conference will include the states of Texas, Oklahoma, New Mexico, Arizona, California, Nevada, Utah and Colorado.——The Mississippi Valley Tuberculosis Conference will be held at Indianapolis, September 29 to October 1 inclusive and will take in the states of Ohio, Indiana, Illinois, Michigan, Wisconsin, Kentucky, Tennessee, Arkansas, Missouri, South Dakota, Iowa, Minnesota, Kansas, North Dakota, Nebraska, Montana and Wyoming.——The Southern Tuberculosis Conference which will convene at Columbia, South Carolina, October 8 for two days, will pay attention to the problem of the tuberculous negro. The states included in this group are: Alabama, Arkansas, Georgia, Florida, Louisiana, Mississippi, North Carolina, Texas, Virginia and West Virginia.——The New England Tuberculosis Conference will be held in Springfield, Mass., October 22 and 23 and will include the New England States. ——The North Atlantic Tuberculosis Conference will be held in Albany, New York, during the week of November 1, and will include the states of New York, Pennsylvania, New Jersey, Maryland, Delaware and the District of Columbia.

National Safety Council Meeting.—The fourth annual congress of the National Safety Council will be held at the Bellevue-Stratford Hotel, Philadelphia, October 19, 20 and 21. The council is the representative organization in the United States for the prevention of accidents in the industries, railroads and public places, and is represented in every state except two by an aggregate membership of 5,000, covering 150 industries, beside many associations, state departments, insurance companies and other agencies interested in the prevention of industrial and public accidents, medical supervision of workmen and other social betterments. The congress will be made up of a general session and a number of sectional meetings covering particular industries, such as cement, laundry, mining, paper, public utilities, textile, and a round table meeting covering the medical supervision and care of employees. In the general session a number of prominent speakers will discuss such subjects as the development of the safety idea, public safety and the railroads, safety in manufacturing, the safety idea as related to credit, standardization of safeguards, and the vital importance of the visiting nurse in industrial welfare work. In the meeting of the medical section different aspects of medical supervision of industries, standardizing the recording of medical data, first aid outfits, caring for unfit workmen, etc., will be discussed by such men as Drs. George M. Price, New York; W. H. Clarke, Massachusetts; J. W. Schereschewsky, Washington, D. C.; Emory R. Hayhurst and Sidney A. McCurdy, Ohio; D. F. Patterson, Pennsylvania; Alice Hamilton, Chicago; Lloyd Noland, Alabama, and M. J. Shields of the American Red Cross. In the manufacturing and other sections there will be discussions of safety technic as applied to the particular industry or business. The division of the congress into sections is a new feature adopted for this congress, and will enable the members of any one industry to devote their attention to the subjects in which they are most directly interested. It is said that accident prevention symbolizes the interest of the people in the conservation of human life, and that the spread of the safety idea is based on education as to the means of accident prevention, which is the object of the congress. There is still much room for improvement. All friends of the safety movement are urged to attend the congress. Dr. Otto C. Geier, Cincinnati, is chairman of the medical section. R. W. Campbell is president and W. H. Cameron, secretary of the council, with headquarters in the Continental and Commercial Bank Building, Chicago.

FOREIGN

Galician University to Reopen.—It is announced that the University of Czernowitz is to reopen at the usual date this fall. The *Klinisch-therapeutische Wochenschrift* states that during the recent Russian occupancy of the city no damage was done to the university or any of the scientific institutes.

E. Fuchs Retires.—Prof. Ernst Fuchs retires this fall from the chair of ophthalmology at the University of Vienna and also from the leadership of the first university ophthalmologic clinic, after thirty years of service at Vienna. He is now 64. In 1901 Fuchs' Manual of Ophthalmology had been translated into six languages and the original manual had reached its seventh edition. The Vienna university faculty have called in his place one of his former pupils, S. Bernheimer, now professor of ophthalmology at the University of Innsbruck.

Deaths in the Profession Abroad.—A. Giordano, privatdocent of hygiene of mines at the University of Palermo. In 1882 he discovered hookworm in the miners of Sicily and later, pneumonoconiosis. He called the attention of the authorities to the deformity resulting from the carrying of loads and succeeded in obtaining reforms which relieved the miners of many burdens. His great work on the physiopathology and hygiene of miners and numerous articles on industrial hygiene carried his name far beyond the confines of Italy.

WAR NOTES

Blake Leaves Ambulance.—Dr. Joseph A. Blake, formerly of New York City, and one of the founders and chief surgeon of the American Ambulance, Paris, it is reported, has withdrawn from the staff of the institution to enter the British hospital service.

Mourning Changed to Rejoicing.—The names of six medical officers were recently listed in the *Münchener medizinische Wochenschrift* as having fallen on the field of battle. The next issue stated that in fact the names had been incorrectly classified; they belonged in the list of those decorated with the iron cross for conspicuous gallantry.

Anthropologic Study of Prisoners of War.—Our Munich exchange relates that a scientific commission has been appointed for anthropologic research on the prisoners of war in Austria. Prof. R. Poch, of the chair of anthropology and ethnography at the University of Vienna, is in charge of the work which is under the auspices of the Anthropology Institute. The Academy of Sciences has appropriated 4,000 crowns for the work (about $800). The notice states that never was there such an opportunity for research along these lines as is afforded now by the prisoners of war. Practically all the tribes of Asia and Africa are represented among them, and men from the Basque provinces, Wales, Bretagne, Esthonia and other peoples of Western Europe and all the Slavic races. The captives may be regarded as presenting pure racial types, and measurements of the skull, chest, and pelvis, color of the hair and eyes, and other data thus recorded will have great scientific interest. The suggestion for the research came from Professor Buschan of Stettin, president of the Society for Ethnologic and Geographic Research.

BERLIN LETTER

BERLIN, Aug. 24, 1915.

Death of Paul Ehrlich

As has already been noted in the Current News (THE JOURNAL, Aug. 28, 1915, p. 803) Paul Ehrlich died August 19 in Bad Homburg. His death was not unexpected. For many years he has been losing in weight, his hair was turning gray rapidly and his skin appeared to be rather cachectic. His expression was one of fatigue and exhaustion. The high degree of tortuosity of his temporal arteries showed that he was suffering from a not inconsiderable arteriosclerosis. He also became afflicted with kidney disease and, finally, diabetes. The basis for his poor physical condition was undoubtedly his extremely active temperament and great mental activity. He probably never rested and so long as he was not overcome by sleep his brain was busy evolving new ideas. He was unquestionably the most original thinker and worker of his time. The ideas originating in his brain and the problems worked out by him were innumerable. He was a worthy associate of his teacher, Robert Koch. His association with Koch was restricted entirely to bacteriologic research. His chemical and biologic researches were made independently of Koch and therefore were original with Ehrlich. To impart a fitting estimate of Ehrlich's work and influence in medicine is wholly impossible in a letter like this, but it may be said that his sole trend and thought of action was to establish the chemical relationship between tissue cells and chemical agents. When he was only twenty-five years of age he contributed to medical literature his phenomenal work on diseases of the blood. The very fine differentiations of blood cells, made by means of staining agents, originated with Ehrlich, as did likewise the study of the particular affinity of methylene blue for the peripheral nerves. Naturally, the next step in the same direction was the attempt to establish the therapeutic property of methylene blue in neuralgias, especially sciatica, and then he discovered that methylene blue killed the malarial organism and therefore could be used in the cure of malaria. Of equal importance was the discovery that trypan red killed animal organisms in the living body and then naturally followed the discovery that atoxyl could be used for a similar purpose. The greatest discovery of all, however, was salvarsan.

It is probably not known widely that Ehrlich was the first to stain the tubercle bacillus with aniline dyes and his connection with the development of the use of diphtheria antitoxin as a cure for diphtheria should be emphasized. He played a much more important rôle in this discovery than is usually accredited to him in the literature. As much praise should be given to Ehrlich for the development of the antitoxin treatment of diphtheria as to Behring. The right to participate in this work was earned by Ehrlich when he gave to the profession his findings on ricin and abrin immunity. The well-known side-chain theory of immunity with which his name is associated was one of the most important discoveries in bacteriology. For many years he was engaged in research work on cancer. When he was forced to give up his work in the laboratory he was working on cancer. Whether his final illness was made worse by his inordinate use of tobacco cannot be determined, but symptoms of heart weakness led him to go to the sanatorium in Homburg. Following a very short period of improvement, death occurred suddenly, due to a rapidly failing heart.

Personal

Professor Ramon y Cajal of Madrid had conferred on him by the German emperor the order of Pour le Mérite, a rather unique distinction.

Prof. Ewald Hering, the well-known physiologist of the Leipzig University, will retire at the close of the winter semester.

Döhle of Kiel, professor of pathologic anatomy, has been made regular *Honorarprofessor*.

Dr. C. Abel, a well-known Berlin gynecologist, has been named to succeed the late Professor Gottschalk as director of the gynecologic division of the Krankenhaus of the Jewish society in Berlin.

The War

FOOD SUPPLY

That there is little danger of starvation is shown by the fact that, owing to the increased crops, only 75 per cent. instead of 83 per cent. of the grain will be milled into flour. This will not only improve the quality of the bread but it will also furnish sufficient food for cattle. The price of bread has also been lowered. In Berlin during the month of July rye bread cost from 40.86—40.43 pfennig (4 cents +) and white bread 61.69—61.05 pfennig (6 cents +). During the spring months these prices were somewhat higher.

DEATHS OF PHYSICIANS

Up to the present time, 302 physicians have been slightly wounded, 108 severely wounded, 185 killed; 84 have died from sickness, 1 succumbed to gas poisoning; sick, 1; prisoners, 81; missing, 83.

CARE OF GERMAN PRISONERS

Provision has been made to send three female nurses of the German Red Cross, under the direction of the Danish Red Cross, to Russia to visit the places of imprisonment. Three Russian sisters will come to Germany for the same purpose. The ministry of war has outlined the route of travel of both bodies of representatives and every effort will be made to further their work. These nurses are not permitted to carry or convey any written communications although they will be permitted to converse with the prisoners to learn their wishes, to write addresses or post cards provided for that purpose so that the families of prisoners may receive some information from them. The great distance to be traveled and the difficulties of traveling have also made it necessary to forbid the carrying of tokens, trinkets and money to prisoners. The German Red Cross has been furnished with a considerable sum of money to be used to relieve the prisoners of want and to furnish such funds for them as may be necessary. The central committee of the Red Cross will turn over a considerable collection of gifts for the German soldiers imprisoned in Russia, and the reports from the Red Cross nurses may form the basis for the distribution of these gifts. The Danish members of this committee who will accompany the German Red Cross nurses have already arrived in Berlin.

MEDICAL SERVICES TO SOLDIER'S FAMILY

Medical attention given to the families of soldiers in the field is being paid for in several of the Berlin suburbs by the local government. Some medicine is furnished gratis. In Berlin the city physicians take care of these people. The patient is furnished with a certificate especially provided for this purpose and this entitles him to treatment and medicine gratis. This plan has not met with the full approval of the public because it places the families of soldiers receiving such treatment in the class of charity patients. Therefore it is quite likely that this method will be changed shortly.

PARIS LETTER

PARIS, Sept. 2, 1915.

The War

TREATMENT OF PENETRATING WOUNDS OF THE CHEST

An interesting discussion on the subject was held at the Réunion médicale de la Iv-e armée. Dr. Abel Desjardins of Paris emphasized the fact that patients with penetrating wounds of the chest ought to be kept under observation for a long time after they had been dismissed from the ambulances at the front, all the more because the complications often are not pronounced at the outset. They are of three classes, hemorrhagic, infectious and mechanical. Secondary hemoptyses are rare. Pulmonary infections from foreign bodies are more frequent. Mechanical complications producing displacements of mediastinal organs produce signs of dysphagia. Dr. Weitzel, in an ambulance at the front, observed ninety-one cases of penetrating wounds of the thorax, which caused eleven deaths. This mortality approaches that of the statistics of the recent wars of the Transvaal, the Balkans, the Russo-Japanese war and the revolution in China, in which the rate was from 10 to 15 per cent. In most cases of this class, functional symptoms were ordinarily absent. Hemoptysis, sometimes discrete, disappearing in two or three days, was observed in a third of the cases; it never gave occasion for serious disquietude. In wounds of the upper third of the thorax, there was generally no hemoptysis. Ordinarily these patients are discharged at the end of from eight to twenty days, with their wounds cicatrized and without having presented any alarming symptoms. In several of them Weitzel observed a slight elevation of temperature in the two days immediately following the wound, which dis-

appeared under the influence of rest and immobilization. Dr. Potherat, surgeon of the hospitals of Paris, also emphasized the relatively benign character of thoracic wounds: Many patients with wounds passing completely through the chest recover very rapidly and without complications under the influence of rest and immobilization alone; even in cases in which for a few hours at the outset there is a disquieting condition of respiratory embarassment, tranquillity returns and the condition becomes satisfactory. There are even patients who do not suspect that they have been pierced by a bullet and who become aware of their wounds only by the escaping blood. Subcutaneous emphysema, even when it is generalized, does not constitute a serious complication; it is not necessary to intervene either by incisions or by scarifications. The air is gradually resorbed, in a time varying according to the importance and extent of the effusion. Except in the cases of intrapleural hemorrhages from lesions of the vessels of the thoracic walls themselves, there is no reason to intervene against pulmonary hemorrhage. As for projectiles remaining in the pulmonary parenchyma, Potherat believes that it is better in general to refrain from operating, at least in the period immediately following the wound. The case is different in intrapleural projectiles free or partially lodged in the walls of the pleural cavities. Such foreign bodies, when they produce suppuration, can and should be removed in the great majority of cases.

Dr. Petit de la Villéon spoke before the Société de chirurgie de Paris on the thoracic wounds that he observed in the naval hospital at Brest. At the outset, he treated such wounds expectantly. The results were bad; he had hemorrhages, suppurations and deaths. The necropsies taught him better; he found more serious lesions than he had suspected —considerable effusions, cases of pyothorax and injuries at the level of the pulmonary tissue. He concluded that his method had been too slow or too timid, and that it was necessary to act more positively. He then began to practice early thoracotomy with drainage assured by a large costal resection, and thenceforward he was the master of infectious and hemorrhagic complications. It should be understood, of course, that thoracotomy is not to be performed in every effusion, but at the first elevation of temperature, at the first chill, and as soon as the exploratory puncture brings pus a rib should be resected and drainage instituted. As for projectiles situated in the pulmonary tissue which do not produce complications, Petit de la Villéon believes that they should be let alone. Dr. J. L. Faure, agrégé at the Faculté de médecine de Paris, and surgeon of the hospitals, has seen at least ten such cases, has made no extraction and up to the present has seen no complications. Petit de la Villéon thinks that the indication in cases of projectiles situated in the pleura, and especially in the pleural sinuses, is for extraction. Faure agrees, but thinks it is generally very difficult to ascertain the exact site of the projectile.

CREATION OF NEW HOSPITALS

The minister of war has just informed the regional directors of the medical service that barrack hospitals should be installed in the environs of the important hospital centers of each region. These hospitals, intended especially to care for convalescents and slightly wounded men, ought to contain at least 500 beds.

TESTS FOR THE SIMULATION OF ICTERUS BY INGESTION OF PICRIC ACID

I mentioned in a previous letter (THE JOURNAL, Aug. 7, 1915, p. 545) the circular of the minister of war with regard to the simulation of jaundice and the test for picric acid in the urine. A new circular recommends the use of the classic reaction to determine the absence of biliary pigments in the urine before making any test for picric acid, for the presence of these pigments may to some degree influence the specificity of the reactions for picric acid:

> One, reaction of probability, consists in neutralizing 10 c.c. of urine, then making it alkaline with a drop of a one-tenth solution of sodium hydroxid; then 5 drops of one-fifth solution of potassium cyanid are added. On heating, a dull red color is produced if the urine contains picric acid. The other reaction is a reaction of certainty. To 100 c.c. of urine are added 10 c.c. of hydrochloric acid; this is shaken with 20 c.c. of ether; the ether which is colored yellow is decanted off; a strip of white wool is placed in the ether for an hour. If the urine contains picric acid the wool is colored yellow and the color resists washing with water; after such washing the yellow wool is colored red by ammonium sulphid.

WAR CRIPPLES AND THE STUDY OF WATCH MAKING

The minister of war has had the excellent idea of having a certain number of war cripples study clock and watch making. For this purpose he has decided to open a special section in the Ecole d'horlogerie de Cluses, in the department of Haute-Savoie, with the aid of the departmental committee of reeducation. Some of the new apprentices have already arrived at Cluses. The government pays 45 francs ($15) toward their maintenance; the difference between this allowance and the cost of their living is made up by local subscription.

THE AMERICAN HOSPITAL AT NEUILLY

The American Red Cross seems to have decided to withdraw its hospitals from Pau in the Basses-Pyrenées. It has been mistakenly supposed that this decision would also affect the American hospital established since the beginning of the war at the lycée Pasteur at Neuilly-sur-Seine. The American hospital at Neuilly is a benevolent organization, completely independent of the American Red Cross; it has been organized and maintained by representatives of the American colony. Since the beginning of the war this institution has greatly increased its activity; it now includes not only the establishments at Neuilly and Juilly but also units of automobile ambulances for the transportation of the wounded, operating in various localities near the front. The American hospital is well provided with funds to enable it to continue its task up to the end of the war.

THE INSTITUTE FOR CRIPPLES

M. Justin Godart, assistant secretary of war for the medical service, has been at the military hospital of Saint-Maurice, where he visited the services of orthopedic surgery and physiotherapy which make this hospital a complete center of functional readaptation. These services prepare the patients to be sent to the professional training school situated in the park which constitutes a center of professional reeducation. Harness makers, shoemakers, tailors, agricultural mechanics, electric motor mechanics, accountants, mechanical draftsmen, architectural draftsmen, surveyors, designers, etc., all lame or minus one or more limbs, are taught there by competent instructors. An annex of this professional school, situated at Paris, arranges for instruction in woodwork, jewelry and other trades through professional or private workshops.

LONDON LETTER

LONDON, Sept. 3, 1915.

The War

THE DIFFICULTY OF SUPPLYING ARMY SURGEONS

The difficulty of supplying surgeons for the new army continues to occupy the medical authorities as well as the government. At a meeting of the War Emergency Committee of the British Medical Association, the present position was stated as follows: (1) The number of men already on whole-time war service totals 5,265; (2) the number of men of 50 and over offering whole-time war service, 447; (3) the number of men from 40 to 49 offering whole-time service, 436; (4) the number of men of 40 and under offering whole-time war service, 633, and (5) the number of men of 40 and under not on or offering whole-time war service, 6,555 up to date. It is seen, therefore, that there are approximately 6,555 men of military age in England, Wales and Ireland. Of these it is necessary at present to obtain the services of about one third. Upward of 900 men over military age are offering whole time. The military authorities say that if these men could be induced to take up war locum work, as they are for the most part not wanted by the authorities, they would set free a number of men who are unable to go unless they can obtain substitutes, local help not being available. Professor Littlejohn pointed out that the war office required at the present moment 2,000 out of the 6,555 men of military age still available in England, Wales and Ireland, for the proceedings of the War Emergency Committee did not deal with Scotland, where an effective national committee exists. The large number of young military men at the base hospitals, many of whom had, in ordinary circumstances, not enough work to fill their time, was criticized. Sir James Barr pointed out that it was the number of younger men, some of whom he understood had joined only for home service, which was the objectionable feature. These younger men ought to be with the expeditionary force and not at the base hospitals. A resolution was adopted that the urgent need for enrolment should be brought before the medical profession.

THE POSITION OF MEDICAL STUDENTS

I have stated in previous letters that many medical students have for a time abandoned their studies and joined the com-

batant ranks of the army. The need for army surgeons is so great that those near the completion of their course were asked to return to their schools and complete their studies so as to be able to join the army in their professional capacity. As stated above, the medical department of the war office requires as many doctors as it can obtain. The civil hospitals and the health departments are working with short staffs. The roll of medical casualties continues. As the army grows, more doctors will be required and still more. Meanwhile we are told by responsible authorities that the number of medical students is dangerously low, and that the "visible supplies" are not so large as might be hoped. The question has been addressed to the war office. What should medical students who desire to serve their country do? The war office answered this by recommending that "medical students in their fourth and fifth years should continue their studies with a view to qualifying as soon as possible," and discouraged the granting of commissions to these men, but was unwilling to suggest that junior (medical) students should be discouraged from taking combatant commissions. It is contended that this recommendation will have the effect of using up the visible supplies of medical students and emptying the medical schools, so that three or four years hence the number of physicians will be even lower than at present. This number was too low before the war partly in consequence of the increased medical work under the insurance act.

TRACHEOTOMY DURING A ZEPPELIN BOMBARDMENT

During one of the recent air raids on the East Coast, a surgeon was performing tracheotomy at night when the German aircraft came over the place. The town electric current was at once cut off. All the lights went out suddenly at the very moment he was opening the trachea. As it was not the first attack against this place, the operator had warned his nurses and assistants that lamps should be kept ready during all operations at night. With but trifling delay the tracheotomy was completed and the child did well. Commenting on this case, the *Lancet* says that to have performed so delicate an operation in such circumstances was a considerable feat, for the raid was a serious one, a good many bombs were dropped, several people were killed and injured, and the feeling at the moment was naturally one of intense apprehension. Some of the bombs hit a house near, the residence of another well-known physician. Luckily no one was at home at the time, and the physician got off with the destruction of a certain amount of property.

THE CASUALTIES FROM AIR RAIDS

The total casualties for the past twelve months from German air raids have been published. Seventy-one civilian adults and eighteen children have been killed; 189 civilian adults and thirty-one children have been injured. No soldier or sailor has been killed, but seven have been wounded.

The Falling Birth Rate

The quarterly return of the registrar-general, just issued, again shows a decline of the birth rate. It was 22.9 per thousand of the population, 3.3 below the mean rate of the ten preceding years, and 1.4 below the corresponding period of last year, and the lowest rate recorded in any second quarter since the establishment of civil registration. At the same time the death rate shows an increase. It was 14.9 per thousand, 1.2 above the mean rate in the preceding decade. The continued decline in the birth rate, coupled with the general increase in mortality among infants, is causing anxiety. The downward movement began some years ago, and is diffused over the whole of the western world. Its causes have been for a long time the subject of much discussion of a more or less academic kind. Today when war is daily taking toll of our young manhood, the problem of the preservation of the race has become acute. One branch of that problem is the waste of infant life throughout the country, especially in the large towns. Accordingly, as the number of children born became less, the organizations which watch over children and mothers redoubled their efforts to secure for every child the condition of a healthy life. Attention was drawn in a previous letter to THE JOURNAL to the increase of the death rate of children. Partly this heavy loss of child life was due to an epidemic of measles; but partly also it was attributed to the scarcity of physicians and nurses for work among the civil population in consequence of the war. Much indirect benefit is expected from the new notification of births act.

Marriages

WILLIAM HAROLD RUNCIE, M.D., to Miss Gertrude Nolan, both of Freeport, Long Island, N. Y., at Rochester, N. Y., September 5.

EDWIN R. MULFORD, M.D., LaCrosse, Wis., to Miss Hope Williams of Cleveland, Ohio, in Chicago, September 7.

WARREN E. LEAPER, M.D., Green Bay, Wis., to Miss Florence C. Averill of Cleveland, Ohio, September 13.

INGMAR UNIUS VANGSNESS, M.D., Beresford, N. D., to Miss Cora Gilbertson of Lisbon, N. D., September 9.

LEWIS EDYARD HAECKER, M.D., Hampton, Iowa, to Mrs. Ada Perrin-Johnston, at Rockford, Ill., August 31.

CHARLES THOMAS O'BRIEN, M.D., Woburn, Mass., to Miss Grace M. Gould of Somerville, Mass., September 1.

CHARLES E. SISSON, M.D., to Miss Bertha E. Vollman, both of Elgin, Ill., at Los Angeles, September 1.

JOHN PATRICK O'NEIL, M.D., Highland Park, Ill., to Miss Katherine C. Joyce of Pittsburgh, September 1.

DAVID A. CAMPBELL, M.D., Tampa, Fla., to Miss Addie Alderman of Palmetto Beach, Fla., August 28.

THOMAS WILFRED TAYLOR, M.D., to Miss Grace Peppercil Rundle, both of St. Louis, September 7.

WILLIAM S. COLEMAN, M.D., Rushville, Ind., to Miss Lillian Righter of Carthage, Ind., September 8.

FRANK HOWARD RICHARDSON, M.D., to Miss Clara Louise Dixon, both of Brooklyn, September 8.

AUGUSTUS KORNDOERFER, JR., M.D., to Miss Mildred Faas, both of Philadelphia, September 1.

FRANK A. MCGUIRE, M.D., to Mrs. Delia V. Wilson, both of New York, September 8.

GARNER M. BYINGTON, M.D., to Miss Bertha Long, both of Charlotte, Mich., September 1.

DAVID EISENBERG, M.D., to Miss Birdie Cohen, both of New York, September 1.

JAMES FRANCIS COX, M.D., to Miss Elizabeth Wise, both of Chicago, September 11.

Deaths

John Evans Sheppard, M.D. University of Pennsylvania, Philadelphia, 1882; aged 56; a Fellow of the American Medical Association; American Laryngological, Rhinological, Otological Society, and American Academy of Medicine; and a member of the American Otological Society; clinical professor of diseases of the ear in Long Island College Hospital, Brooklyn; consulting aurist to the Brooklyn Eye and Ear, Brooklyn, Jewish, Methodist-Episcopal, and St. Catherine's hospitals, Brooklyn, and the Day Kimball Hospital, Putnam, Conn.; attending aurist to the Long Island College Hospital, Brooklyn; one of the best known otologists of America and a prolific writer on diseases of the ear and throat; died at his country home in Putnam, Conn., September 13, after two surgical operations.

Frederick Cornell Sutphen, M.D. New York University, New York, 1889; aged 43; of Bernardsville, N. J.; a member of the Medical Society of New Jersey; at one time a member of the board of health and board of education of Bernardsville, and at the time of his death president of the Bernardsville Water Company and medical inspector of schools; died in the Morristown Memorial Hospital, Morristown, N. J., September 12, after a surgical operation.

James Hartley Anderson, M.D. Western Pennsylvania Medical College, Pittsburgh, 1891; aged 47; a Fellow of the American Medical Association; surgeon and chief of staff of the West Penn Hospital, Pittsburgh, and surgeon to the Presbyterian Hospital, Allegheny; assistant to the chair of principles of surgery in his alma mater; died in the West Penn Hospital, September 6, from organic complications following an operation performed September 1.

George W. Croft, M.D. Louisville Medical College, 1897; aged 48; formerly a Fellow of the American Medical Association; a member of the Kentucky State Medical Association; died at his home in Louisville, September 7, from carcinoma of the stomach. The pallbearers at his funeral were taken from his professional associates in Louisville.

David P. Albers, M.D. Tulane University, New Orleans, 1884; aged 60; formerly a member of the Louisiana State Medical Association; well known as a practitioner and pharmacist of New Orleans; tropical representative of the Louisiana State Board of Health from 1900 to 1905; died at his home at New Orleans, September 7.

George Edward Cragin, M.D. Yale University, New Haven, Conn., 1867; aged 75; a member of the Medical Society of the State of New York and an esteemed practitioner of Kenwood, N. Y.; for many years prominent in the affairs of the Oneida Community; died at his home in Kenwood, September 9, from heart disease.

Walter E. M. Ranchous, M.D. Medical College of Ohio, Cincinnati, 1897; aged 45; a Fellow of the American Medical Association; a member of the staff of the Lawrence Hospital, Columbus; died at his home in Columbus, Ohio, September 6, from carcinoma for which operation had been performed three months before.

Malcolm A. Stewart, M.D. University of Minnesota, Minneapolis, 1902; a Fellow of the American Medical Association; of Omemee, N. D.; one of the oldest practitioners of Bottineau County, N. D.; was killed in an automobile accident while making a professional call near Overly, N. D., August 31.

Fred Julius Parkhurst, M.D. Northwestern University Medical School, Chicago, 1880; aged 60; a Fellow of the American Medical Association; a director of the First National Bank of Danvers, Ill.; a prominent practitioner of McLean County; died at his home in Danvers, September 4.

Martin Albert Rush, M.D. Tulane University, New Orleans, 1909; aged 32; a Fellow of the American Medical Association and a well-known practitioner of Bay St. Louis, Miss.; died at Touro Infirmary, New Orleans, September 1, from pneumonia ten days after an operation for appendicitis.

Theodore H. Taylor, M.D. Cleveland University of Medicine and Surgery, 1882; aged 63; a Fellow of the American Medical Association; for many years a practitioner of Evansville, Ind.; died at the home of his brother in Richland, Ind., September 4, from cerebral hemorrhage.

Charles Harvey Fultz, M.D. Kentucky University, Louisville, 1901; College of Physicians and Surgeons, Baltimore, 1907; aged 39; a member of the Kentucky State Medical Association; once mayor of Vanceburg, Ky., died at his home in that city, September 3, from typhoid fever.

Frank Pope Wilson, M.D. College of Physicians and Surgeons in the City of New York, 1888; aged 50; a member of the Medical Society of the State of California; of San Francisco; died in St. Luke's Hospital in that city, September 6, from cerebral hemorrhage.

Thomas W. Largent, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1890; aged 57; formerly a member of the State Medical Association of Texas, and health officer of Angelina County; at one time mayor of Lufkin; died at his home in that city, September 2.

John Wallace Wade, M.D. Jefferson Medical College, 1884; aged 60; a Fellow of the American Medical Association; president of the Millville, N. J., board of health and Millville Medical Association; died at his home in Millville, about September 14.

Henry Cutler Stearns, M.D. Dartmouth Medical School, Hanover, N. H., 1896; aged 49; village commissioner of Haverhill, N. H., and a trustee of Haverhill Academy; was killed August 23, in a collision between his automobile and a train near Woodville, N. H.

Jacob Milton Bosart, M.D. Medical College of Ohio, Cincinnati, 1858; Miami Medical College, Cincinnati, 1867; aged 81; died, July 16, from malignant prostatitis, at the home of his daughter in Sumner, Ill., where he had resided for fifty-seven years.

Philip N. Eckman, M.D. University of Pennsylvania, Philadelphia, 1888; aged 53; a Fellow of the American Medical Association; attending physician for many years to the Boys' House of Refuge, Glen Mills; died at his home in Philadelphia, September 8.

Byron C. Elms, M.D. Chicago Homeopathic Medical College, 1880; formerly a member of the Nebraska State Medical Association; a practitioner of Chadron, Neb., until 1912, and since that time a resident of Chicago; died at his home in Chicago, September 9.

Albert Grant Coyner, M.D. Miami Medical College, Cincinnati, 1889; aged 51; a member of the Indiana State Medical Association and secretary of the Kendallville (Ind.) State Board of Health; was found dead in his office in Kendallville, September 6.

Benjamin Simons Lucas, M.D. Medical College of the State of South Carolina, Charleston, 1855; aged 81; formerly a member of the South Carolina Medical Association; a Confederate veteran; died at his home in Walhalla, S. C., September 5.

Edgar D. Spear, M.D. Minneapolis College of Physicians and Surgeons, 1901; aged 54; a Fellow of the American Medical Association and a well known practitioner of Nome, N. D.; died September 2 in a hospital at Fargo, N. D.

Charles Paul Becker, M.D. Long Island College Hospital, Brooklyn, 1866; aged 71; for many years associate editor of the *New York Medical Journal*; died at his home in East New York, September 1, from nephritis.

Urial L. Taylor, M.D. University of Louisville, Ky., 1875; aged 82; a member of the Kentucky State Medical Association; health officer of Adair County, Ky., died at his home in Columbia, Ky., September 3.

Charles Fred McDonald, M.D. Detroit College of Medicine and Surgery; aged 45; a member of the Michigan State Medical Society; died at his home in Goodrich, Mich., August 28, from cardiac paralysis.

Ceylon S. Carr, M.D. Chicago Homeopathic Medical College, 1877; formerly editor of the *Columbus Medical Journal*; aged 65; died at his home in Columbus, Ohio, from a nervous breakdown, September 6.

Daniel Reed Freeman, M.D. University of Vermont, Burlington, 1873; aged 75; for nearly forty years a practitioner of Colby, Wis., died in the Wisconsin Veterans' Home, near Waupaca, about August 25.

Jacob Daniel Cooper, M.D. Vanderbilt University, Nashville, Tenn., 1895; aged 61; for more than thirty years a practitioner of Aetna, Tenn., died in Cooter, Mo., about September 7, from nephritis.

William H. Stowe, M.D. Yale University, New Haven, Conn., 1888; aged 73; a health officer of Lewisboro, N. Y.; died at his home in South Norwalk, Conn., August 11, from cerebral hemorrhage.

George Thomas Fluke, M.D. Jefferson Medical College, 1905; aged 34; formerly a member of the Medical Society of the State of Pennsylvania; died at his home in Pittsburgh, September 6.

Marcellus M. Irwin, M.D. Tennessee Medical College, Knoxville, Tenn., 1894; of Luttrell, Tenn.; aged 46; died in the Knoxville General Hospital, September 8, from cerebral hemorrhage.

Almond S. Farrington (license, Indiana, 1897), **aged 83**; a practitioner for fifty-five years; and a pioneer of DeKalb County, Ind.; died at his home in Waterloo, Ind., August 26.

Franklin P. Castanien (license, Arkansas, 1903); aged 62; for fourteen years a resident of Pine Bluff, Ark.; died at the home of his daughter near that place, September 9.

Henry J. Mullen (license, Mississippi, 1882) **aged 59**; for thirty-six years a practitioner of Copiah County, Miss.; died at his home in Clancy, Miss., August 25.

David Porter Bliss, M.D. Jefferson Medical College, 1867; aged 72; a veteran of the Civil War; died at his home in Delaware, Ohio, August 23, from uremia.

David F. Dumbauld, M.D. Columbus, Ohio, Medical College, 1883; aged 54; of Sarcoxie, Mo.; died at the family home in Carl Junction, Mo., August 27.

Merle Verne Forrest, M.D. University of Oregon, Portland, 1910; aged 29; of Florence, Ore.; died at St. Vincent's Hospital, Portland, Ore., August 22.

Samuel Burt Reed, M.D. College of Physicians and Surgeons, Boston, 1911; aged 40; died suddenly at his home in Maynard, Mass., August 31.

John J. Bazan, M.D. Central Medical College, St. Joseph, Mo., 1902; aged 44; was found dead in his room in St. Joseph, August 28.

Richard Bosworth, M.D. University of Michigan, Ann Arbor, 1865; aged 83; died at his home in Winchester, Ind., September 2.

Eber Anguish, M.D. Bennett Medical College, Chicago, 1914; aged 35; of Alberton, Mont.; died in Portland, Ore., August 26.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WALSH—STREET FAKER

Using the American Medical Association as an Advertising Asset in Faking the Public

"*Ladies and Gentlemen:* The meeting this evening is given under the auspices of the American Medical Association. Mr. Walsh, the speaker of the evening, will show you how some of the newspapers of New York City are in partnership with the patent medicine trust, and are robbing the people. On their editorial pages they inveigh against whiskey as a stimulant and on another page they tell you to take Duffy's Malt Whiskey four times a day to build you up. The American Medical Association, through its investigation bureau, its books and its street orators seeks to educate the public not to buy the nostrums so freely advertised in the columns of your newspapers."

Thus, or to this effect, are the curious, on the street corners of New York City, introduced to John J. Walsh, "patent medicine" street faker, by his side partner. After such preliminary bunkum, "Mr. J. J. Walsh of the American Medical Association," speaking from the small automobile that he uses as an accessory in relieving the gullible of their money, harangues the crowd to this effect:

"*My dear friends:* From 1906 until 1909 I was an investigator for the American Medical Association, and during that time I was brought in contact with the various patent medicine advertisers and learned then of the evils of the patent medicine habit. Mr. Samuel Hopkins Adams of the New York *Tribune* in his very able exposé of patent medicines proved beyond any question of a doubt that it is a pernicious habit. He is right. I have here his book, the 'Great American Fraud,' and within a week, possibly a few days more or possibly less, I will have 25,000 of these books for distribution. They have not been sold as yet to the general public, but have been distributed to the members of the American Medical Association for their information."

And much more to the same effect. As part of his stock in trade, Walsh uses a copy of the "Great American Fraud" which he flourishes theatrically, a scrap-book containing newspaper nostrum advertisements, two jars, containing, respectively, a piece of tuberculous lung-tissue and a piece of healthy lung-tissue, and some New York newspapers of the type that carry fraudulent "patent medicine" advertisements. After quoting from the "Great American Fraud" Mr. Walsh finally gets around to the business of the day, that of selling "Walsh's Eucalyptus and Menthol Inhaler for Catarrh, Cold in the Head, Neuralgia, Asthma and Hay Fever." After delivering a panegyric on "Oil of Eucalpytus," Walsh just preparatory to passing inhalers through the crowd for inspection, delivers himself to this tenor:

"Unless eucalyptus oil, Ladies and Gentlemen, was a beneficial oil and afforded relief for catarrh, asthma, etc., the New York County Medical Society, the Society for the Prevention of Tuberculosis, and the American Medical Association would not endorse its use."

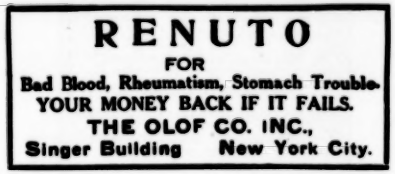
Then, with the aid of his assistant, the crowd is prevailed on to exchange perfectly good money for an obviously bad smell.

As a general, all-around prevaricator Walsh may have competitors but he surely can have no superiors. The claim that his meetings are held under the auspices of the American Medical Association is a falsehood; the statement that he has been an investigator for the American Medical Association is a lie; the assertion that he will have 25,000 copies of the "Great American Fraud" for distribution is an untruth; the declaration that the New York County Medical Society, the Society for the Prevention of Tuberculosis and the American Medical Association endorse this use of eucalyptus oil is a foolish fabrication; the allegation that the "Great American Fraud" has never been sold to the public varies from the truth by about 150,000 copies!

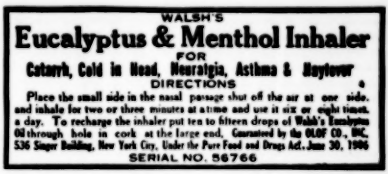
The facts: For months Walsh has been trying without avail, by devious means to get the Association to sell him large quantities of the "Great American Fraud." He even went so far as to invoke the aid of the New York *Tribune*. This great paper, itself an uncompromising foe of medical fraud, then started to look up Mr. Walsh and through its Bureau of Investigation found that the "Olof Company," "The Walsh Herb Medicine Company," "Dr. J. Walsh" of 536 Singer Building and 355 Grand Avenue, Brooklyn, are various names under which J. J. Walsh, "patent medicine" street faker, does business.

Walsh, being unable to obtain the "Great American Fraud" in quantities under his own name or that of "The Olof Company" or "Dr. J. Walsh" has, apparently, invoked the aid of some of his associates. At any rate similar orders have been received from one Octavio Rodriguez, 346 Chauncey St., Brooklyn, and 218 East 42nd St., New York City, who rejoices in the street cognomen of "Parmeelee, the Man with the Economical Principles." Mr. Rodriguez, after investigation, was informed that he, too, would be unable to obtain the "Great American Fraud" in quantities. Then came a request from one Edward Saphir of 477 Schenck Avenue, Brooklyn, who

A flash-light picture of Walsh posing as a representative of the American Medical Association while selling a "patent medicine" in New York City. Walsh is shown excoriating newspapers that carry "patent medicine" advertisements. He also uses a copy of the "Great American Fraud" in separating the gullible from their cash. (*Picture by courtesy of N. Y. Tribune.*)



On the back of the package in which Walsh's "Inhaler" is sold, another nostrum is advertised—"Renuto."

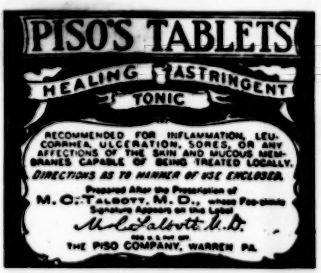

WALSH'S
Eucalyptus & Menthol Inhaler
FOR
Catarrh, Cold in Head, Neuralgia, Asthma & Hayfever
DIRECTIONS
Place the small side in the nasal passage shut off the air at one side, and inhale for two or three minutes at a time and use it six or eight times a day. To recharge the inhaler put ten to fifteen drops of Walsh's Eucalyptus Oil through hole in cork at the large end. Guaranteed by the OLOF CO., INC. 536 Singer Building, New York City. Under the Pure Food and Drugs Act. June 30, 1906
SERIAL NO. 56766

Reduced photographic reproduction of the label on Walsh's nostrum and device.

was going to "lecture" and wanted to sell the "Great American Fraud" as a side-line. Investigation showed that Mr. Saphir has been connected, if he is not still connected, with Walsh! The latest letter to be received comes from "Miss Delia M. Caulfield" who writes from 355 Grand Ave., Brooklyn (Walsh's home address). "Miss Caulfield" would like two hundred and fifty copies of the Great American Fraud sent C. O. D.—but she is not likely to get them.

PISO'S TABLETS AND MICAJAH'S WAFERS

Many of our readers will remember the Association's Laboratory report on "Micajah's Medicated Uterine Wafers," which appeared in THE JOURNAL, March 26, 1910.[1] In commenting on the laboratory's report, THE JOURNAL referred to the fact "that the same interests that control Piso's Consumption Cure also control Micajah's Medicated Uterine Wafers . . ." Attention also was called to the apparent intent of Micajah and Company, while confining their display advertisements exclusively to medical journals, actually to be catering to the public direct. As was said at the time: "The serious aspect of the matter is, that, by the encouragement given them in the advertising literature to treat themselves, women may neglect proper surgical or medical attention in the early stages of serious diseases such as cancer or dangerous pelvic infections, until they get beyond


PISO'S TABLETS
HEALING ASTRINGENT
TONIC
RECOMMENDED FOR INFLAMMATION, LEUCORRHŒA, ULCERATION, SORES, OR ANY AFFECTIONS OF THE SKIN AND MUCOUS MEMBRANES CAPABLE OF BEING TREATED LOCALLY.
DIRECTIONS AS TO MANNER OF USE ENCLOSED.
Prepared After the Prescription of
M. C. TALBOTT, M. D.,
whose Fac-simile Signature Appears on the Label
THE PISO COMPANY, WARREN PA.

Here is reproduced the label on the borax-alum tablets sold to women direct.

the hope of proper management." After the article appeared, Micajah & Co., in a letter to THE JOURNAL, vigorously denied that they were seeking the patronage of the laity.

The original report on Micajah's Wafers stated that the product had, approximately, the following composition:

Alum, dried	59.86 per cent.
Borax, dried	15.62 per cent.
Boric acid	5.67 per cent.
Water of hydration	18.85 per cent.

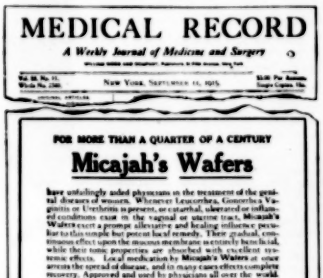
According to such information as we have on file, Micajah & Co. is practically a trade-name under which William A. Talbott does business; that William A. Talbott is secretary and manager of the Piso Company, and that he and his sister are said to control the Piso concern. The Piso Company is well, if not favorably known by the fraudulent nostrum it used to advertise as "Piso's Consumption Cure." The name of this "patent medicine" has, through the exigencies of legal necessity, been modified first to "Piso's Cure, A Medicine for Coughs, Colds, etc.," and more recently to "Piso's Remedy, A Medicine for Coughs and Colds."

Present purchasers of the quondam "consumption cure" find attached to the cork of the bottle a small envelope containing samples of "Piso's Tablets." Those who peruse the less-particular newspapers may also read that "Piso's Tablets are recommended as the best local remedy for women's ailments" and that "two weeks' treatment and an article 'Causes of Diseases in Women'" will be "mailed free" to those who write to the Piso Company.

Those who purchase a box of Piso's Tablets learn from the label that the preparation is "prepared after the prescription of M. C. Talbott, M.D." We fail to find any record of a physician of this name, although the medical directories of about thirty years ago refer to a Dr. Micajah C. Talbott, of Warren, Pa., who was graduated in 1861 by the University of Buffalo Medical Department. The practical identity of the manufacturers of Piso's Tablets and Micajah's Uterine Wafers, suggested the likelihood of the identity of the "tablets" and "wafers" themselves and it seemed worth while to analyze both of these products and compare them. This was done and the report of the Association's laboratory follows:

MICAJAH'S
Medicated Uterine Wafers
A non-toxic antiseptic,
Astringent and alterative preparation.
Valuable in the local treatment of those diseases of the female peculiar to
ESPECIALLY THESE AFFECTING THE GENITO URINARY TRACT
Used with success in Bacterial, Tubercular, Catarrh, Leucorrhœa, Hæmorrhoids, Ulcerations, and Urethritis.
Easy of Application
Prepared by MICAJAH & CO. WARREN, PA.
Continuous in action.
LABEL AND TRADE MARK REGISTERED
TRADE Micajah & Co. MARK
REG. U.S. PAT. OFF.

A reproduction of the label of the borax-alum tablets that are sold to women and the medical profession.


MEDICAL RECORD
A Weekly Journal of Medicine and Surgery
NEW YORK, SEPTEMBER 11, 1915.
FOR MORE THAN A QUARTER OF A CENTURY
Micajah's Wafers
have unfailingly aided physicians in the treatment of the genital diseases of women. Wherever Leucorrhœa, Gonorrhœa Vaginitis or Urethritis is present, or catarrhal, ulcerated or inflamed conditions exist in the vaginal or uterine tract, Micajah's Wafers exert a prompt alterative and healing influence peculiar to this simple but potent local remedy. Their gradual, continuous effect upon the mucous membrane accurately beneficial, while their tonic properties are absorbed with excellent systemic effects. Local medication by Micajah's Wafers at once arrests the spread of disease, and in many cases effects complete recovery. Approved and used by physicians all over the world.
Generous Trial Samples and Literature Free on Request
MICAJAH & COMPANY, Warren, Pa.

Borax-alum tablets advertised ostensibly to the medical profession, but actually to the public. Among other medical journals carrying the advertisement are the *New York Medical Journal, Therapeutic Gazette, Interstate Medical Journal, American Journal of Surgery, Medical Times* and *Medical World.*

CHEMIST'S REPORT

Original specimens of "Micajah's Medicated Uterine Wafers" and "Piso's Tablets," respectively, were submitted to the Chemical Laboratory for examination. The pasteboard box, labeled "Micajah's Medicated Uterine Wafers," manufactured by Micajah and Co., Warren, Pa., contained twenty-five hexagonal wafers. Piso's

1. This is reprinted in the latest (8th) edition of the "Propaganda for Reform."

Tablets manufactured by Piso Company, Warren Pa., consisted of 12 cylindrical tablets in a cylindrical wooden box.

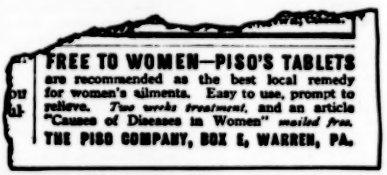
Both "Micajah's Wafers" and "Piso's Tablets" are white, odorless and possess an astringent taste. They are soluble in water with difficulty, the resulting solution being acid to litmus. Hot hydrochloric acid and alkali hydroxids dissolve the powdered substances, leaving a small amount of residue. In both cases lycopodium was identified by microscopic comparisons. Both "Micajah's Medicated Uterine Wafers" and "Piso's Tablets" responded to the same qualitative tests, affirming the presence of aluminum, sodium, potassium, borate, sulphate and a trace of fatty material. From the difficulty in effecting solution, the alum in both cases is probably "burnt" alum.

Quantitative comparisons gave the following results:

	Micajah's Wafers	Piso's Tablets
Average weight	About 10.0 gr.	About 10.0 gr.
Water	19.96 per cent.	19.91 per cent.
Aluminum	5.78 per cent.	5.64 per cent.
Boric anhydrid (B_2O_3)	11.02 per cent.	11.92 per cent.

The acidity of both samples, respectively, was practically the same.

From the chemists' report it will be seen that, as might have been expected, "Micajah's Uterine Wafers"—"ethical proprietary" — are essentially identical with "Piso's Tablets" —"patent medicine." The "Piso's Tablets" advertising matter is of the type common to such nostrums. The underlying theme throughout all of it is to the effect that practically everything that ails a woman is likely to be due to some form of "womb trouble" and that the remedy *par excellence* for "womb trouble" is "Piso's Tablets." However, the claims made to the public for "Piso's Tablets" are no whit more silly or mischievous than the claims made to the medical profession for "Micajah's Uterine Wafers." That the public can be fooled by the claims made for "Piso's Tablets" is not altogether to be wondered at; that physicians have for years tolerated a nostrum like "Micajah's Uterine Wafers" is an unfavorable commentary on the medical profession.


FREE TO WOMEN—PISO'S TABLETS
are recommended as the best local remedy for women's ailments. Easy to use, prompt to relieve. Two weeks treatment, and an article "Causes of Diseases in Women" mailed free.
THE PISO COMPANY, BOX E, WARREN, PA.

Borax-alum tablets advertised to the public direct.

"LOCAL INDUSTRIES AND THE SOFT PEDAL"

Some Comments Thereon by Samuel Hopkins Adams

In the editorial department of this issue is a Current Comment, the second of its kind, under the title "Local Industries and the Soft Pedal." The incident with which it deals was discussed in an interesting article by Samuel Hopkins Adams in the New York *Tribune* for Sept. 19, 1915. The closing paragraphs of Mr. Adams' article in which he deplores the sinister power of the "patent medicine" interests, as exemplified in the Rochester episode, are worth quoting:

"Patent medicine control of legislatures, city councils, newspapers and magazines, and even social and religious organizations, has become a commonplace of knowledge. But one type of organization has supposedly been free of it, the medical bodies. Had the prediction been made to me, six months ago, that any patent medicine interest, however powerful, could insinuate its influence into the proceedings of a representative body such as the American Public Health Association, even by indirect channels, and efficiently protect itself from attack and exposure, I should have dismissed the suggestion as arrant nonsense. Yet the thing was contrived and successfully carried through. There was no fault of omission or commission on the part of the officers of the American Public Health Association. Technically, the matter was beyond the scope of the organization, since in the confusion of overlapping control Dr. Leiser was juggled by local manipulation, working in the interests of 'peace and propriety,' into a position where he was not dealing at all with the American Public Health Association. The biting fact remains, that in a convention devoted to the furtherance of the public health, the representative national organization was deprived of hearing a lecture on a subject of vital interest, both technical and public, through the strategy of one of the most active and powerful antipublic health factors in existence, patent medicine quackery. It could have happened only in a city where quack interests are dominant. It could have happened only in a city where the newspapers are afraid of the news. It could have happened to an organization such as the American Public Health Association only when that body was for the most part kept in ignorance of what was going on beneath the surface.

"If this principle of 'hands off the local fakers' is to prevail, what an admirable opportunity is furnished to nostrum manufacturers in other cities! How they will rush to extend hospitality in exchange for immunity to the American Public Health Association. Thus the holding of the next convention at Columbus might be regarded as an assurance against anything harsh being said about Peruna, or Buffalo might bid for it in the interests of Pierce's Favorite Prescription, or Chattanooga, to protect that ardent religionist, John A. Patten, from interference with his Wine of Cardui quackery; or Binghamton, N. Y., with the flag of Kilmer's Swamp Root nailed at the masthead of its Chamber of Commerce; or Lynn, Mass., in memory of its sainted daughter, Lydia E. Pinkham, long dead, but still advertising; or the City of Brotherly Love — and three cheers for Old Doc Munyon! There is no limit to the profitable application of the principle —and only one drawback. It lacks assurance of permanency.

"Prophecy is a risky business at best, but I venture this prediction, both as an observer and as a member of the American Public Health Association: The patent medicines won their point at this meeting; they never will at another. There will be too many watchers on guard."

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DISINFECTION OF SWIMMING POOLS

To the Editor:—Please inform me what method or methods are used in rendering swimming pools noninfective or free from contamination to innocent patrons.

O. C. KLASS, M.D., Muskogee, Okla.

ANSWER.—Such a method was outlined by S. J. Thomas, *Journal of Industrial and Engineering Chemistry*, 1915, vi, 496, and was commented on in THE JOURNAL, July 10, 1915, p. 170. A paper by Thomas, giving the details of such methods, appears in this issue, p. 1104.

SKIN DISINFECTION — DILUTE ALCOHOL AS A WOUND DRESSING

To the Editor:—Proceedings for alleged malpractice were recently entered against me by a patient who claims that I did not properly cleanse and disinfect a wound following an injury.

The treatment was as follows: The hand and all the wounds cleaned thoroughly with benzine. The hand and all the wounds wiped with dry sterile gauze; an applicator wrapped with sterile cotton and saturated with tincture of iodin was used to paint all abrasions, cuts and wounds on the hand.

My counsel in the case has asked me to give authority which could be quoted to support this treatment and also the continual use of 50 per cent. alcohol as a wet dressing on the hand. We are unable to locate any authorities on this subject. Can you aid me in this matter?

F. R. G.

ANSWER.—The value of benzine in the cleansing of the skin previous to operation and particularly in cleansing dirty

hands or other parts after injuries was set forth by Franke (*Centralbl. f. Chir.*, 1901, xxviii, 300), and since then the use of benzine, alone or in combination, especially with iodin, has become a part of the regular or standard method of cleansing the skin before operation and in cases of accidental injury in many of the large hospitals throughout the world.

The great value of iodin in disinfecting the skin and the surface in accidental wounds is very fully presented in a monograph by Grossich, published by Urban & Schwarzenberg, Berlin, 1911. This monograph also contains a large list of articles on the same subject with a brief abstract of each. The use of iodin for this purpose also finds approval in modern textbooks of surgery, such as Bockenheimer's "Allgemeine Chirurgie," 1914, parts 1 and 2; in Keen's "Surgery," vi; in the Yearbook of Surgery, 1911; and in many periodical articles, and in fact it has found a most extensive use for this purpose during the past few years.

The use of alcohol dressings in the treatment of wounds in the manner mentioned will also be found recommended in Keen's "Surgery" above referred to; in the translated edition of Lexer's "Surgery," and in many other books. Dilute alcohol is an old and well-established dressing for bruises, contusions, wounds, etc.

"STANDARD" RADIUM PRODUCTS—EPISAN (BROBOR)

To the Editor:—1. Please give me some information, if you can, regarding the "Radium Chemical Company" and their "Standard" products. Has the Council on Pharmacy and Chemistry examined these products?

2. Please tell me also whether "Episan," put out by the Gaynor-Bagstad Company of Sioux City, Iowa, has been tested and approved, and with what success used. C. J.

ANSWER.—1. The Council on Pharmacy and Chemistry has accepted for New and Nonofficial Remedies a number of the radium preparations manufactured by the Standard Chemical Company and marketed by the Radium Chemical Company. Before accepting the "Standard" radium products which now appear in New and Nonofficial Remedies, the Council verified the claims made for these products so far as their radium content is concerned. As regards therapeutic efficiency, the acceptance of the Council merely means that no grossly extravagant claims are made for them.

It is believed that, beyond its use in surgical conditions, the chief value of radium is in the relief of pain. In consequence of this, treatment with radium at times seems to bring about improvement in such conditions as arthritis. Scientific reports of curative results appear to be lacking. Many of the published reports concerning radium are overenthusiastic, so that reports of results obtained from the administration of radium preparations, radioactive waters, etc., should be liberally discounted.

2. The Council on Pharmacy and Chemistry held Episan (otherwise known as Brobor) ineligible for New and Nonofficial Remedies for several reasons. In the first place, neither name indicates the active ingredients—potassium bromid, 44.3 per cent.; borax, 41.2 per cent.; zinc oxid, 3.68 per cent., and amyl valerate 4 per cent. A physician prescribing the preparation under either name would not realize that he was administering borax, and therefore would not take the precaution to watch the intestines and the kidneys. Also, he would not realize that the treatment was essentially a bromid treatment. It is a dangerous preparation, without practical therapeutic value in the treatment of epilepsy except that due to its potassium bromid content. There is no evidence to show that borax is harmless, as claimed, or that either borax or zinc oxid is a nerve sedative.

ORANGE JUICE IN INFANT FEEDING—DIABETIC FOODS AND FLOURS

To the Editor:—Is there any objection or advantage in feeding nursing babies small amounts of orange juice? If so, please give particulars and doses.

2. Will you kindly furnish me with the address of a manufacturer of reliable diabetic biscuits or crackers?

L. T. HOTTENDORF, M.D., Paris, Idaho.

ANSWER.—1. Orange juice is not usually much used in the feeding of breast-fed infants. Conditions and indications in the treatment of artificially fed infants are chiefly two: scurvy and tendency to constipation. It is sometimes used in rickets, but the good effects in this condition are doubtful. The dosage is from one-half to 1 ounce a day divided into from two to four portions.

2. In New and Nonofficial Remedies for 1915, p. 191, a number of diabetic foods and flours are described. The preparations mentioned are: Casoid Diabetic Flour, sold by Thomas Leeming & Co., New York City; Gluten Food A, B and C, manufactured by Herman Barker, Somerville, Mass., and Hepco Flour, Hepco Dodgers and Hepco Grits, manufactured by the Waukesha Health Products Company, Waukesha, Wis.

LIGATION OF VARICOSE VEINS

To the Editor:—In THE JOURNAL, July 24, 1915, is an abstract of an article by Secher (*Berl. klin. Wchnschr.*, 1915, lii) on the treatment of varicose veins. Will you please inform me whether in ligating the vein the ligature is thrown directly around the vein or around the skin and the vein? M. O. SHIVERS, M.D., Colorado Springs, Colo.

ANSWER.—Kuzmik of Budapest, whose technic Secher follows, says that the stout silk thread is passed under the vein with a deep curved needle and brought out through the skin, the needle holes being about 0.4 or 0.5 cm. from the edge of the vessel. The ends are tied over a roll of gauze or circular lamp wick, about 2 cm. long, and each thread is tied at once. This insures elastic compression of the vein, which is thus suspended in the loop of silk and prevents the silk from cutting through the skin. Preliminary to the operation, the vein is outlined on the skin. It is rendered prominent by constriction applied to the limb above, and marked with India ink. It is also important to be sure that all branches of the vein are tied off in the same way in the region. The needle is introduced down to the fascia. The detailed report of the article by Kuzmik was summarized in THE JOURNAL, June 14, 1913, p. 1927. The same technic was applied by Schede in 1877, but he used catgut and left the ligature in place only two or three days. His article appeared in the *Berliner klinische Wochenschrift*, 1877, xiv, 85. Kuzmik's latest article appears in the *Beiträge zur klinischen Chirurgie*, 1913, lxxxiv, p. 1.

FORMULA OF THE CARREL-DAKIN "NEW ANTISEPTIC"

To the Editor:—Can you give me the formula for the new antiseptic discovered by Drs. Carrel and Dakin, and the details of this preparation? R. C. EATON, M.D., Chicago.

ANSWER.—This preparation was discussed in an editorial published in THE JOURNAL, Sept. 4, 1915, p. 880. Two hundred gm. of chlorinated lime are added to 10 liters of water in which 140 gm. of anhydrous sodium carbonate have been dissolved. The mixture is thoroughly shaken, and after half an hour the supernatant fluid is separated by siphoning from the precipitate of calcium carbonate, and is then filtered through cotton. The clear fluid thus obtained is made neutral or acid by adding boric acid until a drop of the solution does not redden a few drops of phenolphthalein solution. Usually about 25 to 40 gm. of the boric acid are required.

PONDER'S STAIN

To the Editor:—After looking through various files of journals and several treatises and textbooks on bacteriology, not mentioning medical dictionaries, I have been unable to find any reference to "Ponder's stain," mentioned in the article on "The Recent Methods of Treating Diphtheria," by Dr. Frank C. Neff, THE JOURNAL, Aug. 14, 1915, p. 585. Can you enlighten me? J. E. HUBER, M.D., Peoria, Ill.

ANSWER.—Ponder's stain was described in Queries and Minor Notes, THE JOURNAL, Feb. 7, 1914, p. 476.

STATUS OF NOVOCAIN UNDER HARRISON NARCOTIC LAW

To the Editor:—Is novocain included in the list of narcotics, the same as cocain and opium and its derivatives?

NORTON H. GOOD, M.D., Buffalo.

ANSWER.—In accordance with Treasury Decision 2194, novocain is considered a cocain derivative or substitute, and its registration under the Harrison Narcotic Law is required.

WANTED—REPORTS ON INVARIABLE BLOOD STAIN

To the Editor:—I wish to secure reports of the experience of laboratory men and others who have tried out the Invariable Blood Stain, which I described (THE JOURNAL, Nov. 1, 1913, p. 1627). Such material may be used, with other data, in a second communication. Full credit will be given in case such information is used.

B. G. R. WILLIAMS, M.D., Paris, Ill.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, October 5-6. Sec., Dr. John Wix Thomas, 200 National Bank of Arizona Bldg., Phoenix.

COLORADO: Denver, October 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, October 12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

GEORGIA: Atlanta, October 12. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Wallace, October 5. Sec., Dr. C. A. Dettmen, Burke.

ILLINOIS: Chicago, October 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

IOWA: Des Moines, October 19-21. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

KANSAS: Topeka, October 12-14. Sec., Dr. H. A. Dykes, Lebanon.

MICHIGAN: Lansing, October 12-14. Sec., Dr. R. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, October 5-8. Sec., Dr. Thomas S. McDavitt, 844 Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, October 26-27. Sec., Dr. E. H. Galloway, Jackson.

MISSOURI: Kansas City, September 28-30. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

MONTANA: Helena, October 5. Sec., Dr. William C. Riddell, Helena.

NEVADA: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

NEW JERSEY: Trenton, October 19-20. Sec., Dr. G. H. Norton, 429 E. State St., Trenton.

NEW YORK: Albany, Buffalo, New York, Syracuse, October 5-8. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, October 12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, October 4. Sec., Dr. Quevedo Baez, Allen St., San Juan.

RHODE ISLAND: Providence, October 7-8. Sec., Dr. Gardner T. Swarts, State House, Providence.

UTAH: Salt Lake City, October 4-5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WYOMING: Laramie, October 13-15. Sec., Dr. H. E. McCollum, Laramie.

Connecticut July Report

Dr. Charles A. Tuttle, secretary of the Connecticut Medical Examining Board, reports the oral, practical and written examination held at New Haven, July 13-14, 1915. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 22, of whom 14 passed and 8 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Yale University	(1915)	82.5, 86.3
Tulane University of Louisiana	(1911)	77.9
Johns Hopkins University	(1911) 79.8; (1914)	75.2
Columbia University	(1903) 78.8; (1911) 81.6; (1913)	77.8
Jefferson Medical College	(1914)	79.3, 80.6
University of Vermont	(1913) 76.6; (1914)	76, 77.4, 82
FAILED		
Maryland Medical College	(1913)	56.2
College of Phys. and Surgs., Boston	(1910) 41.6 (1912)	68.1
Harvard University	(1911)	72.7
Cornell University	(1914)	73.7
Western Pennsylvania Medical College	(1905)	67
University of Vermont	(1914)	73, 73.8

Florida June Report

Dr. E. W. Warren, secretary of the Regular Board of Medical Examiners of Florida, reports the written examination held at Jacksonville, June 15-16, 1915. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 67, of whom 53 passed and 14 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Birmingham Medical College	(1915)	77
George Washington University	(1910)	85
Atlanta Medical College	(1914) 75, 75, 91; (1915) 75, 75, 79, 79, 82, 83, 85, 86, 86, 87, 92, 93.	
State University of Iowa, College of Medicine	(1903)	72*
Kentucky School of Medicine	(1892)	62*
Louisville Medical College	(1904)	88
University of Louisville	(1915)	75, 88
Tulane University of Louisiana	(1915)	92
College of Physicians and Surgeons, Baltimore	(1913)	84
Johns Hopkins University	(1910)	90
University of Maryland	(1895)	87
College of Physicians and Surgeons, Boston	(1912) 75; (1913)	75
University of Michigan, Medical School	(1898)	82
University Medical College, Kansas City	(1896)	85
Washington University	(1901)	75
Columbia University, College of Phys. and Surgs.	(1905)	80,
Long Island College Hospital	(1894)	63*
Syracuse University	(1895)	75
University of the City of New York	(1889)	76
Starling Medical College	(1895)	69
Jefferson Medical College	(1889) 70;* (1915)	85, 90
University of Pennsylvania	(1888) 75; (1896)	84
Woman's Medical College of Philadelphia	(1898)	75
Chattanooga Medical College	(1901)	71*
Meharry Medical College	(1915) 80,	81, 83
Memphis Hospital Medical College	(1912)	83
University of Nashville	(1906)	87
University of Tennessee	(1914)	75
Vanderbilt University	(1910) 85; (1915)	91
University of Vermont	(1912)	84
Queen's University	(1909)	83
FAILED		
Birmingham Medical College	(1913)	69
Atlanta Medical College	(1915)	66
Atlanta School of Medicine	(1909)	71
Southern College of Medicine and Surgery	(1913)	52, 57
University of Georgia	(1912)	68
College of Physicians and Surgeons, Keokuk	(1881)	58
Mississippi Medical College	(1913)	43
Lincoln Medical College	(1904)	58
Leonard Medical School	(1913)	70
Meharry Medical College	(1914) 51; (1915)	55, 61
University of West Tennessee	(1914)	72

* Credit allowed for years of practice.

The following questions were asked:

MATERIA MEDICA AND THERAPEUTICS

1. Give physiologic action and therapeutic use of extract of the pituitary body. 2. Give your opinion as to the value of "intestinal antiseptics," and mention the drugs that you regard as belonging to this class. 3. Give indications and contraindications for employment of opium in diarrhea and dysentery. 4. Explain the increased amount of bile in stools following a mercurial purge. 5. Physiologic action and therapeutic use of amyl nitrite. 6. What are antitoxins, bacterins and vaccines? Explain their action. 7. Write a suitable diet list for a child of 18 months suffering from an acute attack of ileocolitis. 8. What therapeutic measures would you employ for treatment of exophthalmic goiter? 9. Outline treatment of chronic furunculosis in a child 10 years old. 10. Mention the therapeutic uses of salicylic acid and its derivatives.

ANATOMY

1. Name the bones concerned in Colles' fracture. 2. Name the bones entering into the formation of the pelvis, and give their articulations. 3. Describe the lymphatic system. 4. What is the difference between aponeuroses and tendons? 5. What structures are concerned in a fallen arch or flat foot? 6. Describe and locate Peyer's patches. 7. Name the muscles of the abdomen; of the orbit. 8. Locate the sacral plexus and tell what organs it supplies. 9. In gastro-enterostomy what anatomic structures are encountered? 10. Describe and locate the rectum. 11. Give origin and course of sciatic nerve. 12. What arteries supply the heart with blood, and from what do they originate?

SURGERY

1. Describe active congestion; passive congestion. State their points of difference. 2. What are the most approved operative procedures in the treatment of varicose veins of the lower extremity? 3. Mention the inflammatory diseases of the bone? Give treatment of acute suppurative osteomyelitis. What are the symptoms of septic surgical fever? 5. What is shock, and how should it be treated? 6. Give treatment of fracture of femur, in detail. 7. Give the symptoms of cholecystitis. 8. Give the palliative and operative treatment of hydrocele. 9. How can the danger of ankylosis be averted after injury to a joint? 10. Describe in detail curettement of uterus.

CHEMISTRY

1. Give a test for indican in the urine. 2. How would you determine if iron was present in the copper solution of Fehling's test for sugar? 3. Give three forms in which carbon is found in nature, and some use for it in each of its forms. 4. Give the formula of three chemical compounds containing ferrum, and a reaction of one of these compounds with some other chemical compound. 5. What is the antidote for iodin poisoning? How can you tell if your solution comes in contact with the iodin? 6. How is nitrate of silver made? Give the formula of its reaction with salt water. 7. Give the physical properties of Mg. How is it best prepared used as an antidote for potash or the metallic salts? 8. Give the chemical formula for formaldehyd. How is it used as a disinfectant, and how much is necessary to disinfect a room 20 by 20 by 20? What is the difference between a germicide, a disinfectant and a deodorant? 9. Give one gas and one solid, explain how the valancy of 2, and what is the effect of one on the other? 10. Give the physical properties of Hg, and the formula for four chemical compounds containing Hg. Which of these compounds named are considered poisonous and which nonpoisonous?

PHYSIOLOGY

1. (*a*) What are the functions of the spinal cord? (*b*) What would be the result of a transverse section in the middorsal region? 2. (*a*) Describe the function of the kidneys, and (*b*) give the physiology of micturition. 3. (*a*) What are the functions of the skin and its appendages? (*b*) How may the functions be affected as to the amount of excretion? 4. (*a*) State the origin and functions of lymph, and (*b*) tell how absorption takes place by the blood vessels and lymphatics. 5. (*a*) Describe the vermicular movement of the stomach and intestines. (*b*) Give the physiology of vomiting. 6. (*a*) Define tidal air; (*b*) complemental air; (*c*) reserve air; (*d*) residual air; (*e*) vital capacity. (*f*) State what is produced in the air by respiration. 7. Define: (*a*) afferent; (*b*) efferent; (*c*) trophic; (*d*) inhibitory; (*e*) motor and vasomotor nerve fibers. (*f*) Give the physiology of the vasomotor nerves. 8. (*a*) What portion of the cerebrum comprises the motor area? (*b*) Give the order in which the arm, face and leg receive their motor impulses. 9. (*a*) Describe a complete physiologic revolution of the heart. (*b*) State the factors which cause the heart sounds. 10. (*a*) What is rigor mortis? (*b*) What is the order of its occurrence in the different parts of the body?

GYNECOLOGY

1. Give diagnosis and treatment of gonorrhea in the female. 2. Give early diagnostic symptoms of cancer of: (a) cervix uteri; (b) fundus uteri. 3. Give causes and treatment of pruritus vulvæ. 4. Describe technic of repair of old cervical lacerations. 5. Describe the normal position of the uterus. 6. Give etiology and treatment of dysmenorrhea. 7. Give indications for use of pessary, and name three varieties and describe the introduction of same. 8. Differentiate acute salpingitis from appendicitis. 9. Define mastitis and give treatment. 10. Name the common tumors of the uterus and adnexa.

OBSTETRICS

1. Describe the successive changes that take place in the ovum after fecundation, and during its passage to the uterus. 2. In the first visit to and the first examination of a case of labor, what should be learned? 3. Describe in detail the mechanism of an L. O. P. 4. What conditions demand version? What forceps delivery? What cesarean section? 5. Give etiology, diagnosis and treatment of uterine inertia. 6. Name the different kinds of hemorrhage that may affect the pregnant woman, the parturient woman, and the puerperal woman. 7. What are the principal drugs used to hasten labor, and discuss in general their use. 8. When should you ligate the umbilical cord, and how dress it? 9. What is ophthalmia neonatorum? Give its etiology, prophylaxis and treatment. 10. Describe a case of trismus nascentium, and give its etiology and treatment.

Book Notices

DIARRHEAL, INFLAMMATORY, OBSTRUCTIVE AND PARASITIC DISEASES OF THE GASTRO-INTESTINAL TRACT. By Samuel Goodwin Gant, M.D., LL.D., Professor of Diseases of the Colon, Sigmoid Flexure, Rectum and Anus at the New York Post-Graduate School and Hospital. Cloth. Price, 5s net. Pp. 604, with 181 illustrations. Philadelphia: W. B. Saunders Company, 1915.

The diseases included under the title of this book are clearly and fully described. The author's own experiences appear mostly in the pages devoted to irrigation and surgical treatment. The portion devoted to diagnostic methods and to parasitology is modern and useful. Description of the infecting bacteria, amebas and grosser animal parasites which produce diseases necessitates a consideration of many tropical diseases, so called because commonest in the tropics, though most of them are sometimes found in the temperate zone. The discussion of treatment is characterized by good judgment and fixed by experience.

The most original part of the book is the description of local and surgical treatment. The technic of intestinal washing by the anus and by surgical procedure is well described. The author is convinced of the efficacy and therefore desirability of washing clean ulcerated and inflamed surfaces. Many may think that this is a personal hobby of his because of the space devoted to it, though the indications given for the procedures are conservative, as the following statement shows:

"Surgical intervention should not be practiced in the treatment of diarrheal, catarrhal and parasitic diseases until after other and less radical therapeutic measures have failed to benefit the patient, except when it is evident that the trouble is incident to acute or chronic intestinal obstruction, in which case an operation is indicated at the first opportunity. Operative interference is also imperative in the presence of intestinal cancer, and in neglected cases where the patient is suffering profoundly from diarrhea, toxemia, exhaustive discharges, and extensive ulcerative lesions of the bowel complicated by mixed infection."

Operations for cancer and obstructions, and those for drainage and cleansing the intestines are described, and the author especially illustrates his own technic for enterostomy, appendicostomy, appendico-enterococostomy and appendicocecostomy.

APPLIED IMMUNOLOGY. The Practical Application of Sera and Bacterins Prophylactically, Diagnostically and Therapeutically, with an Appendix on Serum Treatment of Hemorrhage, Organotherapy and Chemotherapy. By B. A. Thoman, A.M., M.D., Professor of Genito-Urinary Surgery in the Polyclinic Hospital, and R. H. Ivy, M.D., D.D.S., Assistant Instructor in Surgery in the University of Pennsylvania. Cloth. Price, $4. Pp. 359, with 73 illustrations. Philadelphia: J. B. Lippincott Company, 1915.

The authors have presented in simple form the basis and technic of the common immunologic tests and reactions, and the essential principles of biologic treatment. They have succeeded in separating from the mass of experimental evidence and theory the salient facts of immunologic practice. In the preface, the authors give as a reason for the book the fact that the average practitioner's knowledge of biologic therapeusis is a "dangerous thing" because he does not "drink deep of the Pierian spring"; insufficient instruction in these subjects is given in the medical schools, and most authors have written exhaustive treatises of little value to the practicing physician. As a result, "pharmaceutical firms have assumed the function of the department of therapeutics in our medical colleges, not always impartially and to the best interests of medical science."

The book is practically an outline of immunity. The history of the subject and the various antibodies are discussed in separate chapters. The authors consider the various serums and vaccines. Their conclusions seem wholly rational and in line with generally accepted opinion.

In the chapter on miscellaneous serums and extracts, they say concerning crotalin:

"The irrational basis for this treatment and the dangerous nature of the poison are such as to make its use unjustifiable."

Concerning phylacogens they say:

"Without going into further detail, we are of the opinion that the therapeutic use of phylacogens is based upon erroneous conceptions of infection and immunity, is unscientific, empirical, and unjustified. Moreover, there is evidence that their administration is not unattended with risk to the patient."

Considerable space is devoted to the complement-fixation test, the Wassermann test and its various modifications. The Abderhalden, meiostagmin and epiphanin reactions are given. Another chapter explains allergic phenomena and the tests based on them, such as the tuberculin, luetin, gonorrheal and typhoid tests, and the Schick test for diphtheria. A large section of the book is given over to vaccine therapy, which is considered in gross and under the heading of various diseases. In several appendixes the authors describe the technic of serum treatment of hemorrhage, the use of organ extracts in the treatment of disease and the administration of salvarsan and neosalvarsan.

THE NEXT GENERATION. By Frederick A. Rhodes, M.D., Chairman Pittsburgh Morals Efficiency Commission. Cloth. Price, $1.50 net. Pp. 290. Boston: Richard G. Badger, 1915.

This volume consists in the main of quotations, anecdotes, facts and unimpeachable platitudes, rather inconsequently pieced together. Some statistical matter in the final chapter may possibly represent investigation on the author's part as chairman of the Pittsburgh Morals Efficiency Commission; but, beyond this, there is slight evidence of original thought or first-hand knowledge of the subjects discussed. The book resembles as a whole the productions of some pulpit orators, in which the processes of rhetorical asseveration and repetition are substituted for those of thought.

X-RAYS: HOW TO PRODUCE AND INTERPRET THEM. By Harold Mowat, M.D., Temporary Lieutenant, R. A. M. C. Cloth. Price, $3. Pp. 204, with 106 illustrations. New York: Oxford University Press, 1915.

This is an elementary work on the diagnostic use of Roentgen rays. It gives a satisfactory consideration of Roentgen-ray apparatus, and of the technic of Roentgen examinations. One hundred pages are given to the diagnostic use of Roentgen rays, and the subject is well covered. The book confines itself to a practical statement of its subject, and can be recommended to those who wish to learn the essential facts for the satisfactory diagnostic use of Roentgen rays.

EXERCISE IN EDUCATION AND MEDICINE. By R. Tait McKenzie, B.A., M.D., Professor of Physical Education, University of Pennsylvania. Second edition. Cloth. Price, $4 net. Pp. 585, with 478 illustrations. Philadelphia: W. B. Saunders Company, 1915.

Four years have elapsed since the publication of the first edition of the book. Needless to state, physical education has advanced greatly in that time, and has now become a part of the system of practically all educational institutions. In that time also the rhythmic dances have assumed a prominent place in the education of musculature. This book is so complete as to be encyclopedic on its subject,

Miscellany

Substitutes for Absorbent Cotton

Since the beginning of the European war the demand for cotton substitutes has increased on account of the high prices and the difficulty of obtaining cotton. Various cheaper substitutes have been devised but are not as satisfactory. Among these substitutes is "Lignin," a German product made by a secret process which is said to absorb blood better than cotton, but is not so good as a dressing for a wound. It is made in sheets 14 by 24 inches in size. A cellulose wadding made from chemical wood pulp is a Swedish product for dressing wounds. It is prepared in thin sheets like tissue paper, but crimped. The process of manufacture is secret, but it seems to be made in the same way as tissue paper. Another substitute for cotton in dressings is a moss gathered in Westmoreland and Yorkshire, in England. The moss contains minute tubes and in a natural state holds water to the amount of eight or nine times the weight of the plant. When it is dry it is one of the most absorbent materials known. It is soft, light and cool, and, of course, is sterilized before use. Little preparation is required, and it is very economical. It has been used for some time in the hospitals in England. The foregoing information is from U. S. Consuls in Berlin, Goteborg, Sweden, and Bradford, England.—*Commerce Reports*, Sept. 15, 1915.

Poisoning by Noxious Gases

In the *British Medical Journal*, July 31, Black, Glenny and McNee describe their interesting observations in 685 cases of gas poisoning in a casualty clearing station in Flanders. The men were hauled 10 miles in motor ambulances, and some arrived only six hours after being "gassed," while others were seen after a much longer period. The majority did not appear to be in immediate danger, while 120 were in a serious condition. Of the latter, 33 died, giving a death rate among the total number observed of about 5 per cent. Sixteen died on the day of admission, 13 the following day, 2 on the second day following, 1 on the third, and 1 on the fourth day after admission.

Graphically describing the condition of the first batch of men received, it is said: "One man was dead before he could be removed from the ambulance. Most of the others were in a choking condition, making agonizing efforts to breathe, clutching at their throats and tearing open their clothes. At one moment they propped themselves up to gasp, at another they fell back exhausted by their struggles. There was marked cyanosis, especially of the lips and ears, and in a few cases a light yellow frothy discharge was escaping from the mouth and nose. Some, especially the older men, were in a condition of collapse; their faces and hands were of leaden hue, their heads fallen forward on their chests. The majority of these cases did not rally."

Among the hundreds of cases subsequently observed, all degrees of asphyxia were evident. As to the symptoms, a typical patient, on admission, was cold, with a subnormal temperature, conscious but restless, the pulse slow and full, except in the collapsed cases. The face was intensely cyanosed, and the expression was strained and anxious. In some cases the patient sat propped up, with head thrown back, gasping for breath; in others he lay on his side with his head over the edge of the stretcher in an attempt to aid expectoration. The respirations were jerky and hurried, often numbering forty a minute, and were associated with a choking cough, accompanied by a varying amount of frothy expectoration. The auxiliary muscles of respiration were brought into play, the percussion note was impaired without being actually dull, and there were moist sounds of different qualities over the chest.

In the progress three stages were noted, the asphyxial, the quiescent or indeterminate, and after some hours the bronchitic. The first stage, which lasted about thirty-six hours, required energetic treatment, and if the patient could be brought through this, he usually recovered. A few died in the stage of bronchitis, which was intense, with thick, greenish mucopurulent expectoration, delirium, a temperature advancing from subnormal to 104, and small pulse, running up to 160. Respirations were less choking, but often up to 70. Postmortem examination showed that the patients died of acute congestion and edema of the lungs. On arrival, the patients were placed in hot blankets in the open air, with hot bottles and hot drinks, and emetics were given in those cases in which the men were badly choked up, the most successful being salt and water in 10-ounce doses, followed by large drafts of lukewarm water. This gave marked relief, large quantities of mucus being expelled. Other emetics were also tried. Artificial respiration was employed when necessary, with good effect. In the way of a stimulating expectorant, ammonium carbonate in 10-grain doses every three hours was most successful, supplemented, at times with wine of ipecac, 15 minims, which produced copious expectoration. Atropin was not found useful. To relieve and support the heart, venesection was tried and pituitary extract used. Oxygen, benzoin inhalations and opium were also used symptomatically. After death, congestion and edema of lungs and glottis were found, subpleural hemorrhages, distended heart, and venous congestion of the abdominal organs, except the stomach, which in all cases showed a marked catarrh, with submucous hemorrhages. There was marked congestion of the vessels of the meninges and brain tissue.

Public Health Legislation in Wisconsin

A digest of laws passed at recent sessions of the legislatures appeared in THE JOURNAL, Aug. 21, 1915, p. 735. In addition to the laws abstracted therein, a number of notable measures were enacted by the Wisconsin legislature. These include amendments to the medical practice act, to the fee-splitting law, and to the marriage regulation act and the enactment of an optometry law. The medical practice act was amended to give the board of medical examiners more definite jurisdiction over the several branches of medicine and surgery. It gives to osteopaths somewhat greater rights than they had before, and sets forth in detail the educational requirements to which all applicants for license must comply, with certain exceptions as regards osteopathy, midwifery, nurses, those who practice massage and hydrotherapy and chiropractors. The last-named may practice, provided they do not represent themselves as registered or licensed physicians. This is to be done by displaying in their office a sign reading, "not registered or licensed in Wisconsin." It is particularly provided that Christian Scientists, and the like, are to be excepted under the law. The fee-splitting law was amended so as to include the receiver of a divided fee as well as the giver. The marriage regulation law was amended by reducing physician's fees for service rendered from $3 to $2, and permitting physicians to make "a thorough examination of," and to make use of "the recognized clinical and laboratory tests" only if they considered it necessary. The optometry law creates a new board of five members appointed by the governor.

Natural Selection

Paul B. Popenoe, editor of the *American Journal of Heredity*, at the Second International Conference on Race Betterment, in discussing "The Natural Selection of Man," declared: There are only two ways to improve the germinal character of the race, to better it in a fundamental and enduring manner. One is to kill off the weaklings born in each generation. That is Nature's way, the old method of natural selection, which we are all agreed must be supplanted. When we abandon that, we have but one conceivable alternative, and that is to adopt some means by which fewer weaklings will be born in each generation. The only hope for permanent race betterment under social control is to substitute a selective birth rate for Nature's death rate. That means eugenics.

Medicolegal

Physician Not Allowed to Testify as to Mental Capacity of Person Observed While Attending Members of His Family

(Eckman vs. Funderburg et al. (Ind.), 108 N. E. R. 577)

The Supreme Court of Indiana affirms a judgment in favor of the defendants in this contest of the will of one Jacob H. Eckman, deceased, where a physician, introduced as a witness by the plaintiff, was not permitted to testify as to the mental capacity of the testator. The court says that the physician had attended members of the testator's family, but had never rendered professional service to the testator himself. After giving testimony apparently intended to qualify him as an expert, the witness further stated that he had seen the testator on occasions when he had been called to treat his mother, and had observed that his facial expression was very peculiar, such as is often noted in cases of epilepsy; that the testator was very reserved in manner, and would never engage in conversation. The witness was then asked: "What did that indicate to you with reference to the mind of Jacob H. Eckman, if it indicated anything?" Objection to this question was sustained on the ground that the examination was not sufficient, and, on the same ground, an offer to prove that such facts indicated to the mind of the witness that the testator was a person of impaired and unsound mind was rejected. The court finds it difficult to determine from the record whether the witness was testifying as an expert or nonexpert, but it thinks that he was being examined as an expert, and that the plaintiff was seeking to introduce evidence for which, in the opinion of the trial court, no proper foundation had been laid. The Supreme Court cannot say that the trial court abused its discretion in sustaining the defendants' objection to the question as propounded, or in rejecting the offer to prove. It is well settled that the question as to the qualification of a witness to testify as an expert is for the trial court, in the exercise of a sound legal discretion, and its discretion will not be reviewed on appeal except for plain error.

Prohibiting Night Work by Women in Factories

(People vs. Charles Schweinler Press (N. Y.), 108 N. E. R. 639)

The Court of Appeals of New York holds constitutional, as a police regulation in the interest of public health and the general welfare of the people of the state, the provision of the labor law that, "In order to protect the health and morals of females employed in factories by providing an adequate period of rest at night, no woman shall be employed or permitted to work in any factory in this state before 6 o'clock in the morning or after 10 o'clock in the evening of any day." The issue presented, the court says, was whether it can be said that night work by women in factories is so generally and substantially injurious to their health that the legislature was justified by public considerations in preventing the evil by forbidding the cause. Protection of the health of women is a subject of special concern to the state. However confident a great number of people may be that in many spheres of activity, including that of the administration of government, woman is the full equal of man, no one doubts that, as regards bodily strength and endurance, she is inferior, and that her health in the field of physical labor must be specially guarded by the state if it is to be preserved and if she is to continue successfully and healthfully to discharge those peculiar duties which nature has imposed on her. The court gets around its decision in People vs. Williams, 189 N. Y. 131, by observing that the statute involved there bore on its face no clear evidence that it was passed for the purpose of protecting the health and welfare of women working in factories, the different manner in which that case was presented to the court, and the facts and arguments that have been developed by study and investigation during the years which have intervened since the decision in that case was made. There is no reason why the court should be reluctant to give effect to new and additional knowledge on such a subject as this, even if it did lead the court to take a different view of such a vastly important question as that of public health or disease than formerly prevailed. Particularly is it felt that the court should give serious consideration and great weight to the fact that the present legislation is based on and sustained by an investigation by the legislature deliberately and carefully made through an agency of its own creation, the present factory investigating commission.

Failure to Diagnose Mastoiditis—Liability of Employer and Evidence of Partnership

(McGray vs. Cobb et al. (Minn.), 152 N. W. R. 262)

The Supreme Court of Minnesota affirms an order denying a motion of the defendants in the alternative for judgment or a new trial in this action wherein a verdict was rendered against them for malpractice. The court says that, on January 15, 1913, the plaintiff, who for a day or two had suffered severe pain in his left ear, called one of the defendants, a Dr. Beals, a duly licensed homeopathic physician and surgeon, to treat him. Dr. Beals prescribed for him, and the next day made a closer examination and undoubtedly located the difficulty as an inflammation of the middle ear. He, however, claimed that there was then no evidence of such pus formation that good practice would require a puncture of the ear drum to drain the infection. The next morning the pressure of the pus ruptured the drum. The drainage thus opened greatly relieved the pain and reduced the fever. But after three or four days, as the discharge from the ear decreased, the pain and temperature returned and did not yield to the treatments given. The plaintiff claimed that Dr. Beals during the latter days of January and the first part of February attributed the pain to neuralgia and treated accordingly. On February 10 the plaintiff went to a Minneapolis physician, who diagnosed the case as mastoiditis, and the next day performed an operation to drain the mastoid process. The inflammation was found to be deep-seated, having affected and penetrated the mastoid cells clear to the coverings of the brain. Two subsequent incisions into the skull in the vicinity of the ear were found necessary before the affected parts could be drained and placed in condition to heal. During all the time of Dr. Beals' treatment, except for two or three days next after the rupture of the ear drum, the plaintiff testified to having experienced intense pain. The result of the ailment was that the plaintiff was left in a weakened condition; he could not attend to his business for months; and the hearing in the left ear was entirely destroyed.

An examination of the record led to the conviction that there was evidence tending to establish that Dr. Beals did not use the care and skill which would be used by the ordinary homeopathic practitioner. And while this evidence was not very specific or positive as to the exact time when a different treatment than the one given should have been had, yet the court deems it of sufficient strength and certainty to entitle a jury to pass on the issues made by the pleadings. Adroit cross-examination served to draw from the plantiff's medical expert certain answers which, taken by themselves, might seem conclusive in favor of the defendants. But the jury had a right to consider the setting in which the opinions were expressed, and on all the evidence give a final estimate of the opinions of the experts. Because no two physicians of the same school might agree as to the exact time when good practice would require an operation for mastoiditis, or precisely how it should be treated, it does not follow that a physician, in the exercise of ordinary care and skill in his profession, should not, under the facts of this case, have readily ascertained the necessity of operating on the plaintiff many days before the aid of the Minneapolis physician was sought. The court thinks there was also sufficient evidence to justify the submission to the jury of the claim that the loss of hearing in the affected ear resulted from the negligent treatment of Dr. Beals.

The defendant Cobb testified that the other defendants were in his employ. Of course, if Dr. Beals was guilty of malpractice, his employer would be responsible. But the court thinks the testimony in respect to office arrangements and bills rendered for professional services indicated a joint enterprise or partnership between all of the defendants, hence there was no error in submitting to the jury the question of the liability of all the defendants as partners. No explanation was offered why, when professional services were rendered by one of the defendants, the patient would be presented with a bill showing all the defendants entitled to receive the fee charged therefor.

Society Proceedings

COMING MEETINGS

American Academy of Ophth. and Oto-Laryn., Chicago, Oct. 5-7.
American Association of Railway Surgeons, Chicago, Oct. 13-15.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
Utah State Medical Association, Salt Lake City, Sept. 28-29.
Virginia State Medical Society, Richmond, Oct. 26-28.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

MICHIGAN STATE MEDICAL SOCIETY

Fiftieth Annual Meeting, held at Grand Rapids, Sept. 1 and 2, 1915

(*Concluded from page 1055*)

Abscess of the Tongue; Report of a Case

DR. J. VERNON WHITE, Detroit: The patient was 28 years old. He contracted tonsillitis, which followed the usual course. On the fourth day he began to feel pain in swallowing, radiating down the trachea and over the side of the neck, which was accompanied with chills and fever. These symptoms continued, but each day they developed greater intensity, causing a nervous irritability characteristic of exhaustion. This condition continued for ten days, without abatement. At this time I examined him for the first time. He was suffering continually from pain. The tongue was swollen and coated with a white mucous secretion. He could not protrude his tongue without causing intense pain. The tip of the tongue was apparently normal, but the posterior two thirds was very hard and hypertrophied, and occupied the whole buccal cavity. There was a thickening of a few submaxillary glands. Palpation revealed an intense induration on compression. There was no fluctuation noticeable. The case continued the same for three days, when on further palpation I discovered fluctuation. When fluctuation is well established, the important point is to determine where to make the incision to liberate the pus. I recommended that an incision be made below the tongue and a little to one side of the median line. This affords proper drainage, is not likely to become reinfected, and at the same time obviates the possibility of a tracheotomy. The bacteria present in this case were the staphylococcus and colon bacillus.

DISCUSSION

DR. V. A. CHAPMAN, Muskegon: I have had three cases of abscess of the tongue in the last eleven years, which tally with the foregoing description. The first one went on for five or six days, with the patient suffering considerably, before I discovered what was the trouble. The next patient was a man of 76, in whom the symptoms were very grave. In this case an incision was made deep in the base of the tongue from the side, and underneath. The third case was recognized more easily, a free incision made before any fluctuation was felt, and the patient got better. In all of my cases the abscess followed tonsillitis.

DR. B. N. COLVER, Battle Creek: I had an interesting case of this sort. This patient, however, did not have a history of tonsillitis. There was a dysphagia, which led to the diagnosis of probable carcinoma of the tongue. The patient was asked to return, with a view to operation. Within four or five days the man returned with all the symptoms relieved, and with a history of a sudden appearance of pus in the mouth. Examination at that time established the fact that it had been a tongue abscess, which had spontaneously ruptured. I should like to make one suggestion in regard to the early diagnosis of these cases, namely, exploratory puncture with possible withdrawing of the pus, thus making the diagnosis two or three days earlier, and sparing the patient some pain in the days of waiting.

DR. DON M. CAMPBELL, Detroit: These cases seem to be associated with tonsillitis, but it is hard to see how the infection takes place from a peritonsillar infection. It would seem to me to be more likely an infection of the lingual tonsil that would cause such a condition as that reported.

DR. J. VERNON WHITE, Detroit: The literature, which I have looked up very exhaustively, was so obscure as to any causation that I have come to the conclusion that we know nothing about it. It is only a presumption on my part, but, excluding the possibility of other germs, I came to the conclusion that it must be the lymphatics that infected these structures. However, I think Dr. Campbell's point is a good one. But I really think it is very unusual for the deep structures at the base of the tongue to become involved. The time that elapsed between the abscess formation and the time at which the infection originally took place is astonishingly long.

From what information I could gather, the incisions that have been made heretofore in such cases have been through the dorsum of the tongue, by pulling it forward. In this case I thought the easiest way would be to use a trocar and cannula, raising the tongue, and going through anteriorly. In this way the larger vessels are not wounded, and I think it is the safest plan. In operating through the base of the tongue there is danger.

Vincent's Angina

DR. B. N. COLVER, Battle Creek: A large number of cases of Vincent's angina go undiagnosed. It is not a common disease. It may occur epidemically in children's hospitals, but outside of hospitals it is more frequent in young adults. It usually appears in children suffering from some form of malnutrition. It follows or complicates some cases of measles, scarlet fever, whooping cough and diphtheria. In adults, as in children, any lowering of general vital resistance is a predisposing factor. Insanitary environment, faulty personal hygiene and local lesions of the tonsils, gums or buccal mucosa invite the infection. Differential diagnosis must be made with syphilis, diphtheria, streptococcal angina, and other intense infections resulting in ulceration and pseudomembranous formation. In making the diagnosis, one must resort to the study of fresh smears, cultures and the Wassermann test. As regards prognosis, children fare less well than adults. Cases of mixed infection are the least favorable. Treatment should be supportive and eliminative. In hospitals, isolation should be enforced; in families, the usual prophylactic measures. During the past year we have seen seven cases. Two were of the extratonsillar type; one was associated with syphilis, and in another there was apparently a concurrent infection with the Klebs-Loeffler bacillus and the *Bacillus fusiformis* and spirillum. The other three cases showed the possibilities of contagion and the advantage of early diagnosis and prompt therapeutic action.

DISCUSSION

DR. L. J. GOUX, Detroit: I saw one case of Vincent's angina at the eleventh hour. It was thought probable that a tracheotomy in this particular case was the proper treatment. The patient was so much more comfortable by the time I arrived that the idea of any operative interference was dismissed. About three hours afterward I was called suddenly, but the patient died before my arrival. This was evidently an extremely virulent form, and the impression I got from this case was that a case of Vincent's angina in this stage should

not be left alone—that is, without expert help or assistance available.

DR. B. N. COLVER, Battle Creek: The involvement of the larynx in these cases is almost always fatal. I have read of cases in which intubation or tracheotomy has been performed, but in none has such a procedure met success.

Relation of Localized Headaches and Some Organic Eye Lesions to Intranasal Accessory Sinus Diseases

DR. P. J. LIVINGSTONE, Detroit: Some disclaim that the close relation of the sinuses to the orbital cavity is the constant or almost constant cause for grave disease of the optic nerve, associated with disease of the accessory sinuses; but rather that final intra-ocular lesion, especially optic atrophy and retrobulbar neuritis, appears in these cases as a general vascular intoxication. I think, however, the consensus of opinion of those of largest experience is that these two serious conditions, associated with sinusitis and ethmoiditis, are dependent on pressure of exudate, either by direct exudate pressure or distended sinus walls, or local extension of infection or new growth. The important group, however, of ocular symptoms due to accessory sinus disease is made up of those cases of optic neuritis, neuroretinitis and thrombosis without external signs of orbital inflammation. The second class of cases comprises those persons coming frequently for the relief of frontal and orbital headache, by the way of refraction correction. One will not find pus in the anterior portion of the hiatus semilunaris to indicate antrum disease, or in the posterior portion to indicate posterior ethmoid disease, but one will find on inspection often a very narrow middle meatus, sometimes on account of a large, turgescent, intensely red middle turbinate, which of itself fills up the middle meatus, obstructing drainage. Sometimes a high septal deflection is to be found impinging on the middle turbinate, causing pressure swelling. Often these cases have much irritation of the so-called sensitive area, with sneezing, frequent head-colds and conjunctivitis of greater or less degree. I am convinced that many of the latter class deserve more careful examination for obstruction of the middle and superior meatus for the relief of trying frontal and orbital pains.

DISCUSSION

DR. DON M. CAMPBELL, Detroit: We perhaps have not a very clear idea of the various intranasal conditions which may produce symptom conditions about the eye. The pressure conditions in the intranasal cavity are very important. One class of cases is very trying, namely, those patients coming with asthenopic symptoms, with a low grade of astigmatism, and perhaps some imbalance of the ocular muscle, with heterophoria. In two or three weeks or a month after careful correction, these patients will come back with a different type or degree of phoria. In this class of cases it is almost impossible to fix the point of the axis of the cylinder correctly, permanently. I have seen quite a number of such cases that have been permanently relieved by relief of the intranasal pressure. Another interesting class of cases includes those due to various grades of sepsis in the nose.

DR. W. R. PARKER, Detroit: I have never seen a case of optic atrophy that I have been able to attribute to causes in the accessory sinuses. That it does occasionally occur there can be no doubt, but a coincident retrobulbar neuritis with polypi is not enough evidence to make it an etiologic factor.

DR. R. B. CANFIELD, Ann Arbor: Although the optic nerve itself is in very intimate relationship in some skulls with the posterior ethmoid and sphenoid, we find in those skulls absolutely nothing in the nose to support any belief that a nasal condition may be important in establishing this eye disease. In such cases, when other factors have been eliminated, it has been too often the custom to do some surgical interference in the nose, the result of which is that healthy accessory sinuses have been opened, slightly turgescent middle turbinates have been removed, and other operative procedures have been indulged in, with the result that the patient has been more uncomfortable than before. I deprecate such operative interference unless a very definite reason can be seen for so doing. I think that cases of fundus disease dependent on accessory sinus disease are very rare.

DR. J. E. GLEASON, Detroit: I have had two cases of ruptured mucocele in the frontal sinus that produced all the symptoms of tumor of the orbit. In both these cases the roentgenogram failed to help in any way to show necrosis of the floor of the sinus, and there was also no evidence on the part of the middle meatus.

DR. ALBERT E. BULSON, Jackson: My experience is that these cases of optic nerve trouble are due to other causes than the nasal reflex irritation present.

DR. B. R. SHURLY, Detroit: For many years I have been endeavoring to find these cases. It would seem, from the work of Dr. Loeb, that we must be missing a great many of them; but, in point of fact, they are extremely few.

Restoration of Functional Activity Following Surgical Treatment of Nasal Tract

DR. O. W. WHITE, Detroit: Malocclusion produces nasal disturbance. I have noticed cases in which mouth-breathing has developed with no malocclusion of the arches, or nasal obstructions apparently present. The mouth simply relaxed involuntarily, causing all the surrounding tissues to lose tone and their power to functionate. This condition may be corrected by forced nasal breathing during sleeping hours by the use of lip and chin bandages. Even young children can wear them with little inconvenience. Artificial stimulation of tissues involved by massage is always helpful, if skilfully applied.

DISCUSSION

DR. R. B. CANFIELD, Ann Arbor: The laryngologist is perhaps considerably at fault because he has not cooperated with the orthodontist as he should. The laryngologist removes adenoids and tonsils, and is very prone to believe that that child has perfect nasal breathing. And if he sends the patient to an orthodontist for the correction of the occlusion, he feels that his duty has been done. It is a very simple thing to measure the nasal breathing and mouth breathing, and this should be done. We know that just as long as a child can breathe more easily through the mouth than through the nose, he will continue to do so. The laryngologist should see that the child breathes more easily through the nose than the mouth after operation.

DR. V. A. CHAPMAN, Muskegon: I agree with Dr. Canfield's position. These children do not get enough air normally, and consequently are forced to breathe through the mouth. In our public schools they give breathing exercises, which are incorrect, in that they teach the child to inhale through the nose and exhale through the mouth. I think that is radically wrong. Those breathing exercises should be conducted with the inhalation and exhalation both through the nose.

DR. JAMES M. DE KRAKER, Grand Rapids: The lack of development of the chest and the muscles of proper breathing in these cases makes it difficult for the child to keep the mouth closed. The thing to do, after the nasal and throat obstructions have been removed, is to try to develop the muscles of proper breathing. I have found that exercises with this end in view have accomplished a great deal. Of course, the closing of the mouth with some apparatus at night is sometimes necessary, because you lose at night what is gained in the daytime, but when you can establish breathing in such a way that it will become easier to breathe through the nose than through the mouth, the mouth-breathing is cured.

Scleral Trephine Operation for Detachment of the Retina: Results Obtained in Twelve Patients

DR. WALTER R. PARKER, Detroit: I wish to report my results in cases of detachment of the retina treated by trephining the sclera, associated with incision in the choroid and retina. In three cases very good results were obtained. In two cases in which the vision was made worse, one had fluid vitreous, a portion of which was lost during an operation for cataract extraction, and the other was a case of high myopia. The field was made worse in three cases. In one the detachment was very extensive and the choroid was not incised. In another there were present contraction bands in the retina, the choroid was detached, and the patient had a four-plus Wassermann, with total detachment of the other

eye. The third was a case of high myopia. The procedure seems to be unattended by any danger, either of impairing the integrity of the globe, or, in uncomplicated cases, of increasing the extent of the detachment. On theoretical grounds, at least, it would seem desirable to drain off the subretinal fluid without injuring the retina. In the cases reported, however, the best results were obtained when the escape of the subretinal fluid was followed by a discharge of a small amount of vitreous.

Gas Bacillus Infections

DR. ANGUS MCLEAN, Detroit: This infection in private practice is somewhat different from what it is in military surgery, in that it is unexpected. Cases are rare, and usually the infection is not anticipated until there is some evidence by the air in the tissue and its subsequent crackling. In our experience the Roentgen ray has been able in some cases to show the line of gas before it could be detected by palpation. In our series of cases the results after amputation of the limb have not been any better than the open method. We believe in the excision of all necrotic tissue and the injection above the injury by separate puncture of hydrogen peroxid or oxygen itself. Gas bacillus infection is not always confined to injured tissue. It has been seen in the puerperal cases, and always fatal. Clinically, it is not possible for us to differentiate between the malignant edema and the true gas bacillus infection. The treatment, however, is about the same. We strongly recommend the use of the Roentgen ray in suspected cases.

Ureteral Obstruction: Report of an Unusual Case

DR. FRANK C. WITTER, Petoskey: My patient, 19 years of age, weighing about 95 pounds, suffered with intermittent attacks of pain in the right upper abdomen, accompanied by a visible rounded tumor about the size of an orange, that would disappear, with cessation of the pain. Examination of the urine and functional tests were negative, as were also roentgenograms of both kidneys. Collargol injections were not deemed advisable. She presented some symptoms of chronic appendicitis with general enteroptosis. There was no evidence of stone in pelvis or ureter. Three anomalous vessels crossed the ureter in close proximity to each other, causing the obstruction when the exaggerated visceroptosis allowed the ureter to be drawn tightly across the vessels. Ligation and section of these vessels removed the obstructing factor. No return of the trouble has recurred during the year which has elapsed since the operation.

Osteoma of Frontal Sinus, with Report of Case

DR. V. A. CHAPMAN, Muskegon: A woman, aged 52, consulted me, May 14, 1908. She stated that she had been having headaches for three years, since having the grip. Some enlargement of the right supra-orbital ridge region was apparently bearing down on the right eye. She had headache almost constantly, and sometimes it was very severe. A large, irregular, nodulated, ivory bone tumor was removed from the right frontal sinus. The tumor rested in the frontal sinus, and by pressure erosion had caused a small perforation of the anterior bony wall. There was considerable milky white, thickened mucus about it, and it was this which caused the fluctuation on palpation. The tumor extended from near the external angular process of the frontal bone to nearly an inch past the median line, thus extending over into the left frontal sinus. A large projection of the tumor had pushed down into the ethmoid region beneath the nasal bones. The tumor had arisen by a short pedicle springing apparently from the diploe of the skull above the frontal sinus. There is a thin layer of bone compressed in a fissure between the left projection of the tumor and its main body. This is the portion that extended over into the left frontal sinus.

Effect of Loud Noises on the Organ of Corti

DR. E. J. BERNSTEIN, Kalamazoo: Man is losing many of his delicate senses. Environmental changes no longer necessitate the strenuous exercise of these functions for the maintenance of life. Continued loud noises and explosive noises result in great destruction to the organ of Corti primarily, and secondarily to the nerves of hearing. In many cases this destruction is permanent and irremediable. In some of the explosion experiments, however, especially when they have been repeated, it has been found that Nature restores the function again after a period of rest.

Report of the Committee on Vaccine and Serum Therapy in Diseases of the Eye, Ear, Nose and Throat

DR. WILFRID HAUGHEY, Battle Creek: Circular letters were sent to thirty men throughout the state asking for results of bacterin and serum therapy. It was late in the year, and a sufficient number of replies to justify final conclusions were not received. All who have reported seem to feel that they have secured desired results. The majority use mostly autogenous vaccines. The reports for autogenous vaccines show a little better results, about 4 per cent., than those for stock vaccines. I have used both stock and autogenous vaccines, with the advantage in favor of the latter. In most cases I have used the stock vaccines while having autogenous vaccines prepared. During the time of this investigation I have used autogenous vaccines in fourteen cases, with eleven clinical cures and three improved. I have used stock vaccines in fifteen cases, with twelve clinical cures, one improved, and two not improved. I have used vaccines in otitis media, subacute and chronic, mastoiditis, ethmoiditis, frontal sinusitis, rhinitis, pharyngitis, tonsillitis, blepharitis and furunculosis. One failure was in episcleritis and one in a chronic otitis media. Three of the men who answered the circular letter believe better results are obtained when the infection is staphylococcic, and all state that their experience gives them faith that vaccines have distinct therapeutic value.

DISCUSSION

DR. ANNA O'DELL, Detroit: I have had a good deal of success in the treatment of chronic arthritis following acute attacks with autogenous vaccines.

DR. DON M. CAMPBELL, Detroit: In gonorrheal iridocyclitis in the acute stage, antigonococcic serum is the logical remedy. Diphtheritic conjunctivitis also is best treated by a serum. There is one place in otology in which a suitable serum is of the greatest value. When the surgeon has done all he can do, surgical drainage has been established, all diseased tissues removed, perhaps the sinus opened and jugular vein tied, and still the recuperative powers of the body seem inefficient in starting the patient on to recovery—when a negative phase of great persistency has been established, and the protective processes of the body, overstimulated in the fight with infection, lie dormant, then the right serums will frequently supply temporarily what the body cells cannot produce. The patient is tided over a crisis, and when he has once passed it, the way is opened to recovery.

DR. L. J. GOUX, Detroit: The cases in which I have used vaccines covered about the same classification as that read by Dr. Haughey. In three cases I had autogenous vaccines made. In one case, a child with arthritis, the vaccine treatment was the only one used, with very good result. In some cases of children with glandular nodules in the neck, when it has been difficult to say just what was the cause, I have used the mixed vaccines, and have had very good success with the use of the stock vaccines.

DR. JOHN G. HUIZINGA, Grand Rapids: I have been interested more particularly in the application of vaccine treatment in case of atrophic rhinitis. I have treated eight or nine cases in the last year along this line, some with indifferent results, but in three I secured very satisfactory results.

DR. E. W. E. PATERSON: I have had four cases of laryngitis, one with almost complete aphonia, in which I have used vaccines with good results. I favor autogenous vaccines, but would not discourage the use of stock vaccines when we are not prepared to make the autogenous vaccines.

Modern Diagnostic Methods in the Surgery of the Kidney

DR. DANIEL N. EISENDRATH, Chicago: In cases of persistent or recurrent fever in which no other focus of infection can be found, the kidney should always be thought of as the seat of trouble. It is a common occurrence to see cases of the most severe renal infection without any signs pointing to the

urinary tract. The bladder should be examined and the ureters catheterized when the urine contains pus, or there are symptoms of cystitis, and local treatment does not help. I make it a routine practice to have roentgenograms made in every case of infection of the upper urinary tract. Not infrequently a calculus will be found as the source of trouble.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

September, X, No. 3, pp. 153-228

1 *Protein Need of Infants. B. R. Hoobler, Detroit.
2 *Studies in Infant Metabolism and Nutrition. Composition and Preparation of Protein Milk (Eiweissmilch). A. M. Courtney and H. L. Fales, New York.
3 *Diagnostic Significance of D'Espine's Sign. H. F. Stoll, Hartford, Conn.
4 Longitudinal Sinus as Place of Preference in Infancy for Intravenous Aspirations and Injections, Including Transfusion. H. F. Helmholz, Chicago.
5 *Studies on Epidemic Abortion Reactions in Children. J. P. Sedgwick and W. P. Larson, Minneapolis.
6 *Results of Von Pirquet Reactions. W. R. Ramsey, Minneapolis.
7 Does Bacillus Abortus (Bang) Infect Man? M. Nicoll, Jr., and J. S. Pratt, New York.
8 Quantitative Determinations of Nonprotein Nitrogen in Blood of Newborn. F. W. Schlutz and C. J. V. Pettibone, Minneapolis.

1. **Protein Need of Infants.**—Hoobler has followed the method of feeding low protein for the past three years and it is his belief that children do better, since the method allows the giving of much larger quantities of carbohydrates and fats without overfeeding the child, and readily permits the use of top, whole, skimmed or buttermilk formulas according to the clinical indications of each individual infant. In cases in which large quantities of milk are fed it is necessary to feed relatively low proportions of carbohydrates if one attempts at all to approximate the caloric need. Protein when fed in excess of need causes an increase in the energy metabolism. The increase is in proportion to the amount of protein oxidized, and not to the amount of protein added to the body. Protein when fed in excess does not reduce the amount of fat and carbohydrate metabolized, but the fat and carbohydrate need remains fairly constant, and unless the minimal need of fat and carbohydrate is supplied in the food the organism will draw on its stored-up fat and glycogen to supply the difference between the amount fed and that which is metabolized.

When protein is fed greatly above its need it tends to produce a condition of stupor which assumes serious proportions if such feeding is continued. This stupor gradually disappears as protein is reduced in the diet. This condition is best considered as a protein food injury and constitutes a clinical entity as definite in its symptomatology as that which arises from too prolonged use of a rich carbohydrate diet. The protein need of the growing infant is supplied when 7 per cent. of its caloric need is furnished in protein calories. A general rule which will approximate the protein need is to furnish three-quarter ounce of whole, skimmed or top milk, per pound weight of child, or if the metric system is applied, one twentieth of the body weight in skimmed, whole or top milk. To keep the protein calories in any formula approximately 7 per cent. of the total, Hoobler says, the following rule regarding the addition of sugar or cereal gruels or both may be followed: for each ounce of whole milk add one-third ounce of sugar or cereal. For each ounce of top 16 ounces (7 per cent.) milk add one-fourth ounce of sugar or cereal. For each ounce of top 10 ounces (10 per cent.) milk add one-sixth ounce of sugar or cereal.

2. **Composition and Preparation of Protein Milk.**—Courtney and Fales found that the chief variation in the composition of protein milk is in the fat. Uniformity is secured not only by the use of ingredients of uniform composition, but, what is much more important, by the exercise of great care in the handling of the curd. It should be suspended for a short time or allowed to rest for fifteen minutes on the sieve before manipulation to drain off the whey; care in pressing the curd through the sieve is also essential. Since the value of protein milk is in large measure due to its low sugar content, the washing of the curd with water is a useful means of removing an additional amount of sugar. When properly prepared the amount of protein in protein milk is quite constant and is usually somewhat greater than that of the original milk; it is nearly all casein. If the buttermilk is added while the curd is being rubbed through the sieve, it is unnecessary to repeat this part of the process. In the ash of protein milk the amount of calcium and phosphorus is slightly greater, that of sodium, potassium and chlorin is less than in whole milk, being reduced to a little more than one half the proportion present.

The authors caution that certain things are to be avoided in preparing protein milk: (1) stirring too much or too long while adding the rennin; (2) leaving the milk during curd formation in a cold place; (3) any unnecessary handling of the curd in straining off the whey or in washing or in pressing through the sieve; (4) subsequently heating beyond that required in feeding. The composition of protein milk obtained by Courtney and Fales from analyses made by them is: fat, 3.0 to 3.50 per cent.; sugar, 1.8 to 2.0; protein, 3.60 to 4.00; ash, 0.65.

3. **D'Espine's Sign.**—Stoll summarizes his study as follows: whispered bronchophony in the interscapular space (D'Espine's sign) is indicative of a pathologic process at the hilum of the lung. This may be due to enlarged glands the result of malignancy, leukemia, Hodgkin's disease, syphilis or any infectious disease of the lungs. He has also seen it several times in aortic aneurysm. Its presence in the delicate child is exceedingly suggestive of tuberculous involvement of the tracheobronchial glands. Occasionally enlargement of the bronchial glands is present when there is no change in the whispered voice. In old people in whom the usual physical signs of pulmonary tuberculosis are sometimes exceedingly difficult to elicit, the character of the whispered voice in the interscapular space should always be ascertained, as a well-marked D'Espine sign speaks for tuberculosis rather than for chronic bronchitis or emphysema. The diagnosis of clinical tuberculosis, however, Stoll says, rests on the sum total of physical signs and symptoms, not on one isolated sign.

5. **Epidemic Abortion Reactions in Children.**—In a series of newborn children who had as yet received no cow's milk the blood was collected by the authors from the cord at birth, or from the child's heel during the first few days after birth, and immediately examined. In all, forty-two such newborn children were examined, without a single positive reaction. Eighteen of the forty-two children were girls. Three of the infants died and postmortem examinations showed: (1) bronchopneumonia with cardiac dilatation; (2) congenital syphilis and bronchopneumonia. This child gave a positive Wassermann and a negative abortus reaction; (3) bronchopneumonia and congenital hydronephrosis. The case of one baby not included in the above series, as he received other feeding than breast milk, is exceptionally interesting. His blood gave a positive reaction using the *Bacillus abortus* as antigen. He was taken from the breast on the seventh day after birth as he had a high fever, the cause of which was not ascertained. He was then fed on artificial food containing cow's milk and on the twenty-first day the reaction was positive. This is the earliest positive bacillus abortion reaction observed (by the authors) and it is especially to be noted that the reaction was found two weeks after removal from the breast. The child recovered.

Another baby gave a positive reaction and had an enlarged spleen. It was 19 months old, with fair nutrition, and had been on a general diet. The postmortem examination showed empyema, abscess of the lung, suppurative coxitis and adenitis. As this reaction is carried out in the same manner as the Wassermann test except that the *Bacillus abortus* is used as an antigen, the fact that the blood of five children with

congenital syphilis gave negative reactions with this test should be recorded. As bone lesions suggestive of rickets have been produced in laboratory animals by injection of the *Bacillus abortus*, the fact that several marked cases of rickets gave negative reactions is of interest. Other conditions in which negative reactions were found were eczema, hydrocephalus, nephritis, atrophy, varicella, measles, diphtheria, bronchopneumonia, chorea, enteritis, anemia, imbecility and chronic pulmonary tuberculosis.

6. **Results of Von Pirquet Reactions.**—The tests recorded by Ramsey were made with old tuberculin and bovine tuberculin on the children of the state hospital for crippled and deformed children at St. Paul, together with the complement reactions made on the blood of the same children with the *Bacillus abortus* as antigen. There were in all 116 children examined, 58 boys and 58 girls. Von Pirquet reactions were made on all cases with old tuberculin and bovine tuberculin. Whenever a positive reaction was present for one, it was also present for the other. There were no exceptions to this rule. Of the 58 boys, 20 reacted positive and 38 negative. Of the 58 girls, 22 reacted positive and 36 negative—a total of 42 positives and 74 negatives. In 18 out of 20 positive reactions in boys, a clinical diagnosis of tuberculosis of the bone had been made. In the other two positive cases, one suffered from clubfoot and the other from infantile paralysis. In 15 out of the 22 positive von Pirquet reactions in girls, the clinical diagnosis was tuberculosis of the bones or joints. Of the other 7 cases, 1 had clubfoot, 2 dislocated hips, 2 rickets, and 2 curvature of the spine. Seventeen boys and 11 girls gave a negative von Pirquet when the clinical diagnosis was tuberculosis of the bone. Of the total number of 58 diagnosed clinically as tuberculosis, only 28 gave positive von Pirquet reactions.

American Journal of Physiology, Baltimore

September, XXXVIII, No. 3, pp. 313-413

9 Analysis of Certain Photic Reactions, with Reference to Weber-Fechner Law. Reactions of Blowfly Larva to Opposed Beams of Light. B. M. Patten, Boston.
10 *Influence of Extract of Posterior Lobe of Hypophysis on Secretion of Saliva. G. O. Solem and P. A. Lommen, Vermillion, S. D.
11 *Influence of Vagus Nerve on Gaseous Metabolism of Kidney. R. G. Pearce and E. P. Carter, Boston.
12 Changes in Iodin Content of Thyroid Following Changes in Blood Flow Through Gland. C. F. Watts, Chicago.
13 Photo-Electric Currents in Eye of Fish. E. C. Day, Syracuse, N. Y.
14 Comparative Rate at which Fluorescent and Nonfluorescent Bacteria are Killed by Exposure to Ultraviolet. W. E. Burge and A. J. Neill, Chicago.
15 Effects of Change in Auricular Tone and Amplitude of Auricular Systole on Ventricular Output. R Gesell, Washington, D. C.

10. **Influence of Hypophysis on Secretion of Saliva.**—In the experiments conducted by Solem and Lommen pituitary extract invariably caused a diminution in flow of blood and saliva from the submaxillary gland, as shown from results obtained from thirty dogs and one cat. The decrease in flow of saliva was greater than the accompanying decrease in blood flow. The slowing of blood was less marked if the injection was made during faradization of the chorda tympani than during pilocarpin stimulation, while the slowing of saliva was the same. Pilocarpin was relatively ineffective even when injected seven or eight minutes after pituitary extract. While epinephrin normally caused a vasodilatation of the gland and increase in salivary secretion, epinephrin during the action of pituitary extract had the normal effect on the blood flow but caused a diminution in salivary flow, probably due to the greater quantity of pituitary extract coming in contact with the gland. When pituitary extract was injected during the action of chrysotoxin, the decrease in the flow of saliva set in before the vasoconstriction in the gland occurred. In five out of seven cases, the flow of saliva slowed while there was active vasodilatation in the gland. From these results the authors conclude that the decrease in flow of saliva following the injection of pituitary extract is due to inhibition of the action of the secretory nerves to the submaxillary gland, but also due in part to the accompanying vasoconstriction, which is caused by direct action on the muscles of the arterioles or the effect on the peripheral endings of the vasomotor nerves, but more probably to the effect on both. The decrease in output of blood from the gland may be also due to the decreased activity of the gland.

11. **Influence of Vagus on Gaseous Exchange of Kidney.**—Pearce and Carter found that the oxygen consumption of the left kidney, before and during the stimulation of the vagus below the level of the heart and after section of the left splanchnic nerve, remains unchanged. This offers evidence against the supposed existence of renal secretory fibers in the vagus nerve.

American Journal of Tropical Disease and Preventive Medicine, New Orleans

August, III, No. 2, pp. 65-118

16 Results of Blood Cultures Bearing on Etiology of Filarial Diseases; Description of New Parasitic Bacillus Believed to be Causative Agent of Filariasis. B. H. Dutcher and P. L. Whitmarsh, U. S. Army.
17 Exclusion of Tropical Diseases by Means of Immigration Inspections. W. C. Billings, Angel Island, Calif.
18 Present Status of Our Knowledge of Leprosy. G. W. McCoy, Hawaii.

Annals of Surgery, Philadelphia

September, LXII, No. 3, pp. 257-384

19 Phenomena of Acidosis and Its Dominating Influence in Surgery. G. W. Crile, Cleveland.
20 *Literature of Fractures. T. W. Huntington, San Francisco.
21 End Results of Bone Fractures. W. L. Estes.
22 Autoplastic Repair of Fractures of Neck of Femur. C. Davison, Chicago.
23 Extension and Reduction of Transverse or Serrated Fractures of Femur. H. Gifford, Syracuse, N. Y.
24 Notes on Fractures. W. J. Ryan, Philadelphia.
25 Fractures of Sesamoid Bones of Thumb. P. G. Skillern, Jr., Philadelphia.
26 Arthroplasty of Elbow; Report of Five Cases. A. P. C. Ashhurst, Philadelphia.
27 Empyema; Exploration of Thorax with Primary Mobilization of Lung. H. Lilienthal, New York.
28 *Banti's Symptom Complex with Relation to Splenectomy. J. B. Blake, Boston.
29 Chronic Intestinal Stasis as Produced by Obstruction at Ileocecal Region and at Hepatic Flexure. R. B. Williams, Norfolk, Va.
30 Diphtherial and Pseudodiphtherial Primary Cutaneous Infection. A. E. Billings, Philadelphia.

20. **Literature of Fractures.**—A comprehensive survey of the literature of fractures, covering the past ten years, leads Huntington to the following conclusions: The public demands, and is entitled to, better results from fracture treatment than have hitherto been obtained. From 80 to 90 per cent. of long-bone fractures can be successfully treated by the closed method. Conservative treatment exacts a high degree of skill and close attention to details. Resort to the open method is of too frequent occurrence. The least possible amount of foreign fixation material should be the rule. Steel plates, in the treatment of fractures, are a menace from the the standpoint of permanency. The bone implant is the fixation material of choice. Intramedullary splints are inferior to the autogenous bone implant. Fixation material of whatever type is not to be relied on for maintenance of alignment. Cases of nonunion and faulty union which come to secondary operation indicate indifferent methods of primary treatment. Operative treatment of compound fractures should be withheld until the external wound healing is perfected. Many joint fractures can only be treated successfully by the open method. Normal contour and good function are closely related in end-results of all fractures.

28. **Banti's Symptom Complex Splenectomy.**—Blake advises that splenectomy in splenic anemia or Banti's symptom complex should be recommended under the following conditions: First, in adults, when the diagnosis is agreed on by a good physician and a competent surgeon. Second, when the condition of the patient is sufficiently good to withstand what may be a serious operation; or when a poor condition can be sufficiently improved by one or more previous transfusions. Third, in children, only after a thorough trial of all possible medical methods of treatment, including fresh air, sunshine, careful nursing, liberal and appropriate diet, as well as the judicious exhibition of drugs. In a large majority of cases, a high white count, or a considerable recurring or continuous

fever are contraindications. In children also the agreement of physician and surgeon is an essential preoperative requirement.

Arkansas Medical Society Journal, Little Rock

August, XII, No. 3, pp. 61-89

31 Importance of Legitimate Scientific Sexual Union in Development of Character and Production of Contentment and Happiness. C. S. Pettus, Little Rock.
32 Ectopic Gestation. W. A. Snodgrass, Little Rock.
33 Hydrotherapy. C. T. Drennen, Hot Springs.
34 Report of Clinic for Diseases of Eye, Medical Department, University of Arkansas, 1914 to 1915. F. Vinsonhaler, Little Rock.
35 Relation of Physician to Public Health and His Obligations. J. T. Clegg, Siloam Springs.
36 What Tuberculosis Cases Are Unsuitable for Sanatorium Treatment. F. P. Baker, Booneville.

Boston Medical and Surgical Journal

September 9, CLXXIII, No. 11, pp. 375-411

37 *Late Results of Operations for Correction of Foot Deformities Resulting from Poliomyelitis. H. W. Marshall and R. B. Osgood, Boston.
38 Carnivorous and Herbivorous Types in Man; Possibility and Utility of Their Recognition. J. Bryant, Boston.
39 *Pneumococcic Arthritis; Report of Six Cases. J. W. Sever, Boston.

37. **Operations for Correction of Foot Deformities.**—The varieties of surgical procedures employed by Marshall and Osgood in twenty-six cases with failures in only three cases were the following: Five cases of Achilles tendon lengthening or tenotomy. Five cases of plantar fasciotomy. Seven cases of tibialis anticus tendon transplantation for varus deformity. One case of tibialis posticus tendon transplantation for previously overcorrected valgus deformity. One case of tibialis posticus tendon transplantation into a weakened Achilles tendon. Five cases of peroneal tendon transplantation for valgus deformity. Five cases of peroneal tendon transplantation into weakened Achilles tendon. Six cases of extensor longus hallucis tendon transplantation laterally into head of first metatarsal bone for hyperextension and flexion of the great toe. Two cases of arthrodesis of the first phalangeal joint of the great toe associated with transplantation of extensor longus hallucis tendon. Nine cases of arthrodesis of smaller joints in connection with tendon transplantation, namely, calcaneo-cuboid joint, five instances; astragaloscaphoid joint, four instances. Five cases of osteotomy, namely, os calcis, two instances; astragalus, two instances, external cuneiform bone, one instance. One case was of insertion of a silk ligament from the tibia to the tarsus for valgus deformity.

There were four examples of calcaneus deformity, five of marked equinus, ten of decided varus, and twelve of valgus defects. Four calcaneovalgus deformities ended as follows: (1) a poor functional result from increased instability of the foot following transverse osteotomy of the os calcis and transplantation of peroneal tendons into the Achilles tendon. There was partial correction, however, of the anatomic defect; (2) slight functional improvement from an astragalectomy, but the patient is obliged to wear a long leg brace because of knee weakness; (3) a fair degree of improvement after an astragalectomy. The patient wears now only a leather ankle support; (4) an excellent result with nearly complete correction of deformity; good stability, and no braces needed after astragalectomy. Seven astragalectomies showed useful, stable feet in four cases, slight instability in two cases and serious instability in one instance. Arthrodeses of the ankle joint yielded solid useful ankles in good position three times. One was stable and useful with a few degrees of motion in the joint. Two relapsed into their former bad conditions and one of the two was followed by a successful astragalectomy. Five Achilles tendon lengthenings and tenotomies showed two perfect results, and three improvements from partial corrections; and no bad terminations. Five Achilles tendon strengthenings exhibited partial restorations of strength in four of the five instances. The fifth was no worse than in its original state.

39. **Pneumococcus Arthritis.**—The six cases cited by Sever represent various methods of infection by the pneumococcus, namely: From the mouth by way of a tooth infection. 2. By trauma without previous known pneumonia. 3. By a previous pneumonia followed by an otitis media. 4. By trauma followed by pneumonia and involvement of the joint in nine days. 5. Following several attacks of bronchopneumonia and immediately after an acute attack of otitis media. 6. Involvement of joint two weeks after an acute attack of lobar pneumonia. This case represents the only typical one. The fluid in all these cases was rather thin and greenish yellow when the joint was first opened, but as it continued to drain at the time of the operation the heavier pus escaped. It was during this period that the fibrin flakes were expressed. The mortality was three out of six cases, 50 per cent. The joints, so far as he has been able to determine, are practically normal in the cases Sever has been able to follow.

California State Journal of Medicine, San Francisco

August, XIII, No. 8, pp. 293-332

40 Some Typical Experiences with Syphilitic Patients. V. G. Vecki, San Francisco.
41 Angina Pectoris. W. W. Kerr, San Francisco.
42 Dermatitis Caused by Primula Poisoning. D. W. Montgomery and G. D. Culver, San Francisco.
43 Early Diagnosis of Pulmonary Tuberculosis. R. A. Peers, Colfax.
44 Occurrence of Heart Block in Acute Diseases. H. W. Allen, San Francisco.
45 Pitfalls in Diagnosis of Renal Lithiasis. M. Krotoszyner, San Francisco.
46 Pediatric Situation in Europe and Effect of War on Same. J. A. Colliver, Los Angeles.
47 Tuberculosis of Female Genitals. J. W. James, Sacramento.
48 Personal Experience with Cholecystectomy. L. W. Allen, San Francisco.

Journal-Lancet, Minneapolis

September 1, XXXV, No. 17, pp. 463-494

49 Clinical Significance of Blood Pressure. O. N. Meland, Dawson.
50 Reflexes in Health and in Organic and Functional Diseases. O. Sahlberg, Jr., St. Paul.
51 Value of Orthodiagraph. L. M. Field, Aberdeen, S. D.
52 *Estimation of Eosinophils of Blood in Diagnosis of Lung Conditions. T. A. Peppard, Minneapolis.
53 Recovery from Paralysis Following Decompression of Spinal Cord. E. H. Beckman, Rochester.

52. **Eosinophils of Blood in Diagnosis of Lung Conditions.**—It is Peppard's purpose to show that, in making a differential diagnosis between certain pulmonary diseases, namely, tuberculosis, chronic bronchitis, emphysema, bronchial asthma, asthmatic bronchitis, one may be aided by making a differential leukocyte count to determine the percentage of eosinophils. In practically every list is mentioned, as a cause of eosinophilia, bronchial asthma; and to this Peppard adds an associated condition, "asthmatic bronchitis," that is, a recurring bronchitis of the smaller tubes not necessarily associated with true asthmatic attacks. Given a doubtful case, with other doubtful tests, a low count of the eosinophils would be evidence on the side of the tuberculous condition. On the other hand, a count of from 4 to 6 per cent. or more would be testimony against the lesion being caused by an active tuberculous process.

Journal of Outdoor Life, New York

September, XII, No. 9, pp. 277-306

54 *Sunlight Treatment of Tuberculosis. G. B. Webb, Colorado Springs, Colo.
55 Foods and Their Preparation. L. A. Cauble, New York.
56 Cleansing Clinical Thermometers. C. Ludwig, Cleveland.
57 Red Cross Seals for 1915. C. M. De Forest.

54. **Sunlight Treatment of Tuberculosis.**—Webb has carried out Rollier's method of treatment for three years at Colorado Springs; but, while finding it to be of much benefit to patients with either bone, joint, or glandular tuberculosis (surgical tuberculosis), as well as to those patients with pulmonary tuberculosis, he is not yet able to share the same high degree of optimism for the method which is held by Rollier. He feels it wise to warn patients against the careless employment of sun baths without proper medical control, as harm can be done by them. The head should be protected especially at first by a light hat, and in the case of adults Rollier sometimes advises the covering of the heart with a wet compress.

Laryngoscope, St. Louis

August, XXV, No. 8, pp. 539-602

58 Leukoplakia Buccalis et Lingualis. R. Levy, Denver.
59 Labyrinth Operation; Frequency with which it is Demanded as Determined by Hospital and Private Statistics, Extending Over Period Ten Years. E. B. Dench, New York.
60 Cancer of Larynx Complicated with Laryngocele. H. Smith, New York.
61 Somnoform as Anesthetic. T. H. Halsted, Syracuse, N. Y.
62 Bárány's Cerebellar Localization. L. K. Guggenheim, St. Louis.
63 Two Cases of Foreign Bodies in Bronchi Complicated by General Emphysema. H. L. Lynah, New York.
64 Foreign Body in Left Bronchus. H. L. Lynah, New York.
65 Case of Chronic Frontal Sinusitis, Sphenoiditis, Influenzal Meningitis, Death, Necropsy. C. J. Imperatori, New York.
66 Hysterical Mutism Caused by Shell Explosion. M. Natier, Paris.
67 Improved Tonsillar Hemostat. J. A. Hagemann, Pittsburgh.
68 Anterior Commissure Laryngoscope. C. Jackson, Pittsburgh.

Medical Record, New York

September 11, LXXXVIII, No. 11, pp. 425-466

69 Blood Transfusion; Indications and Technic. G. I. Miller, Brooklyn.
70 Prophylaxis in Dementia Praecox and Other Psychoses. J. R. Ernst, Washington, D. C.
71 Pneumococcic Infection of Throat. W. C. Sandy, Columbia, S. C., and C. G. McGaffin, Kings Park.
72 *Relation of Landry's Paralysis to Poliomyelitis. M. Neustaedter, New York.
73 Medical Colleges Responsible for Many Spirit and Drug Addicts. T. D. Crothers, Hartford, Conn.
74 Prevention and Treatment of Deformities in Anterior Poliomyelitis. J. Grossman, New York.
75 Eczema and Bulkley Rice Diet. F. Tweddell, Summit, N. J.
76 *Simple Treatment for Ivy Poisoning. J. E. Lane, New Haven, Conn.
77 *New Way of Staining Cells in Cerebrospinal Fluid. B. Lemchen, Dunning, Ill.

72. **Relation of Landry's Paralysis to Poliomyelitis.**—Neustaedter believes that Landry's paralysis is a clinical entity with varying pathologic changes. These may be primarily in the peripheral nerves, and confined to them, or they may be myelitic only, and again neurocellular. Poliomyelitis, Neustaedter says, is a pathologic entity with varying symptom complexes. There may be flaccid paralyses, with muscle atrophy, or spastic paralysis, or cranial nerve involvement, also ataxias and tremors or mixed types.

76. **Treatment for Ivy Poisoning.**—The treatment employed by Lane is this: The affected areas are loosely covered with two or three thicknesses of gauze or cheesecloth, which is kept continually moist with a solution of boric acid, the strength of which is unimportant. The gauze is frequently changed in any case, but the frequency depends somewhat on whether there is much oozing from the blebs. The larger blebs are opened but it is unnecessary to touch the smaller ones. If the gauze is used more than once it is rinsed and boiled before it is reapplied. This is usually the whole treatment, but in cases in which the itching is intense some additional relief may be obtained from gentle sponging with a weak solution of alcohol when the gauze is changed. A simple ointment may be used for protection after healing has begun and the skin has become fairly smooth. The advantage of this treatment, in addition to those already mentioned, is that no trauma is inflicted and that if powder settles on the skin from evaporation of the liquid it is easily dissolved at the next application by using a more dilute solution.

77. **Staining Cells in Cerebrospinal Fluid.**—Lemchen takes benzidin and makes up a 2 per cent. solution in glacial acetic acid, which he calls Solution 1. The other solution is hydrogen peroxid. When ready to count the cells, take a small test-tube and put in Solution 1 with an equal amount of Solution 2, mixing the two together. Take a pipet and draw up the stain to 0.5 and then draw the spinal fluid to the 11 mark. The two are mixed together and then put on the counting chamber. Lemchen uses the Fuchs-Rosenthal. The red blood cells are stained blue and the polymorphous cells are stained a light yellow, while the nucleus is visible by having blue granules in it. Parts of the periphery are stained blue. In the lymphocytes, the periphery is stained, looking like a dark blue ring. The middle of the cells is not stained except in places there are blue granules. In the plasma cells, the periphery is stained dark blue, almost black and the middle of the cell is all clear—taking no stain at all.

Missouri State Medical Association Journal, St. Louis

August, XII, No. 8, pp. 353-398

78 Treatment of Syphilis. W. J. Wills, Springfield.
79 *Infantile Syphilis and Neosalvarsan. F. C. Neff, Kansas City.
80 Alternating Pulse. A. E. Taussig, St. Louis.
81 Case of Heart Block Illustrating Mode of Action of Vagus Nerve on Heart. G. C. Robinson, St. Louis.
82 Rational Obstetrics. G. A. Aiken, Malta Bend.
83 Some Modern Ideas in Dermatology. J. Grindon, St. Louis.
84 Heredity. J. L. Statler, Granger.
85 Autogenous Serum Therapy in Certain Dermatoses. R. S. Weiss, St. Louis.
86 Panama before Advent of Dr. Gorgas. J. E. Jennings, St. Louis.
87 Case of Erythema Multiforme with Conjunctival Involvement. M. L. C. Barnett, St. Louis.
88 Some Convenient Stereoscopic Figures. W. E. Shahan, St. Louis.

79. **Infantile Syphilis and Neosalvarsan.**—Thirteen infants that gave a pronounced Wassermann reaction, that had syphilitic symptoms or were not thriving well, were given neosalvarsan by Neff at two weeks' intervals as nearly as possible. All cases received the injection intravenously, usually in a vein of the scalp, otherwise in the external jugular. No untoward symptoms appeared from intravenous injection. Thirty-three intravenous injections were made. In some instances the solution leaked out past the needle. In two cases the resulting infiltration left an indurated mass for two or three weeks, but no sloughing or suppuration occurred. Neff used the remedy dissolved in about 5 c.c. of freshly distilled water, injected slowly with a Lüer syringe, and a three-quarter inch, No. 20 to 22-gauge needle with short level.

A small area of the scalp is shaved, cleansed, and alcohol and iodin applied. In most instances Neff followed Holt's dosage of 0.075 gm. under 6 months of age, 0.15 over that age, although larger doses have been used at times without injury. After observing the results from one or two doses of neosalvarsan, mercury was then begun and continued with subsequent injections of neosalvarsan when possible. The results show a rapid disappearance of cutaneous lesions, more rapid than with any other drug. One dose has usually been sufficient for this. The rhinitis and osseous lesions disappeared after two or three doses. In most of the cases the infant became as well in appearance as any infant similarly nourished. It is difficult to make a hospital syphilitic child gain on artificial food. Breast milk is almost a necessity. Three infants died, a mortality of 23 per cent. In the few instances in which repeated Wassermanns were made, little effect was noticed on the subsequent reaction.

New York Medical Journal

September 11, CII, No. 11, pp. 541-588

89 Effects of Tobacco and Alcohol on Cardiovascular System. R. N. Willson, Philadelphia.
90 Our Present Knowledge of Tuberculosis. M. E. Lapham, Highlands, N. C.
91 Chondrodystrophy; Report of Case. R. D. Moffett, New York.
92 Intra-Ocular Muscles in Tabes Dorsalis. L. C. Peter, Philadelphia.
93 Endameba Buccalis and Alveolodental Pyorrhea. G. C. Brunelle, New York, and G. Ginsberg, Hoboken, N. J.
94 Blepharochalasis. N. Jenison, New York.
95 Scarlet Fever. J. R. Graham, New York.
96 Posture and Arm Movements in Deep Breathing. J. F. Rogers, New Haven, Conn.
97 *Treatment of Paresis; Intralumbar Injections of Neosalvarsan. C. F. Read, Dunning Ill.
98 Treatment of Rigid Scoliosis. S. Kleinberg, New York.
99 Infant Mortality Eighty Years Ago. C. Herrman, New York.
100 Direct Laryngobronchoscopy and Esophagoscopy. C. B. Broder, New York.

97. **Treatment of Paresis.**—Twenty cases have been treated by Read with 123 injections by the lumbar route. In no case has the menstruum been less than 10 c.c. of the patient's own spinal fluid. The method has been that of Ravaut, and the intervals have been at least two weeks in all cases. The dose for the first five or six injections has been 3 mg., after which in a few cases it has been increased to 4.5 and

6 mg. All cases were treated during the last five months of 1914. All cases were those of male patients in varying stages of the disease and all with positive laboratory findings in the spinal fluid. During the treatment three patients died, but of these, two were in the final stages and death cannot be fairly attributed to treatment. In one case, the patient, already slightly spastic when received, became intensely spastic and died with symptoms of motor tract degeneration. Two patients suffered incontinence. A few complained of weakness, headache, and leg pains from time to time after treatment. A number, at various times, had a slight rise in temperature for a short time after treatment. One patient developed Charcot joint during treatment. One patient had convulsions following treatment, but has had others not connected with treatment.

The Wassermann of the blood serum in nine cases (not tested in remainder) remained 4+. In two it is now negative, but in one it was negative before treatment and in the other it was not tested. One negative and one faintly positive Wassermann in the spinal fluid have become strongly positive. One patient has entered a fair remission, but still shows positive fluid findings. Another is improved markedly, but is still evidently paretic. A number show improved conduct or physical health, which may possibly be the result of hospital care. In three cases the Wassermann in the spinal fluid has become weaker. From the foregoing results Read thinks it is fair to conclude that intralumbar treatment with neosalvarsan in small quantities is without effect, and that when pushed with the object of obtaining results, it is extremely apt to prove injurious. Its use in this manner is to be discouraged.

Northwest Medicine, Seattle, Wash.

September, VII, No. 9, pp. 273-304

101 Near Border Line of Quackery. C. W. Sharples, Seattle.
102 How and Why of Vaccination Against Small-Pox. J. N. Force, Berkeley, Calif.
103 Enterospasm Causing Intestinal Obstruction; Report of Case. A. A. Matthews, Spokane.
104 Emergency Gastro-Enterostomies in General Practice. C. N. Suttner, Walla Walla.
105 Intratracheal Insufflation. E. S. Jennings, Spokane.
106 Inoperable Carcinoma of Stomach at Twenty-Six Years of Age. E. O. Houda, Tacoma.
107 Heating of Operating Tables. J. A. Pettit, Portland, Ore.

New Jersey Medical Society Journal, Orange

September, XII, No. 9, pp. 417-480

108 Acute Pyelitis of Pregnancy. N. G. Price, Newark.
109 *Immunization of Pollenosis. S. Oppenheimer and M. J. Gottlieb, New York.
110 Infant Mortality Problem in New Jersey. J. Levy, Newark.

109. **Immunization of Pollenosis.**—The authors warn the profession against "hay fever" vaccines as exploited by the various pharmaceutic concerns. Their attention has been called recently to a vaccine that has lately been put on the market, which contains a mixture of a large number of pollen extracts. The mixture is to be given both in spring and fall cases. No diagnostic means are employed to determine which pollen or pollens are operative in a given case. Under these circumstances, they say, many a patient who is suffering from the spring variety of pollenosis, being already a fit subject for further sensitization, is placed in danger of becoming sensitized to those pollens which are active during the fall. Furthermore, pollen extracts deteriorate on standing and extremely toxic substances may be found in these extracts which may endanger the life of a patient. It is also stated that pollen extracts in large doses are extremely dangerous and with the dosage not properly controlled by experienced workers in this particular field, a calamity from mishandling may cast a shadow on a valuable proposition.

New York State Journal of Medicine

August, XV, No. 8, pp. 289-326

111 Midwife Problem in State of New York. J. Van Doren Young, New York.
112 Position of New York State Department of Health Relative to Control of Midwives. L. R. Williams, Albany.
113 Evolution and Treatment of Hyperthyroidism in Its Mild Types. H. Brooks, New York.
114 Cases of Dysthyroidism. J. M. Swan, Rochester.
115 Cervical Dilatation by Hydrostatic Pressure. W. T. Getman, Buffalo.
116 *Prognostic Value of Cholesterinemia in Chronic Nephritis. E. Henes, Jr., New York.
117 Psychanalysis and Its Field of Usefulness. C. R. Payne, Wadhams.
118 Bowel Obstruction Following Pelvic Operation. W. D. Johnson, Batavia.
119 Case of Chancre of Tongue. A. J. Gilmour, New York.
120 Observations Concerning Operative Treatment. O. A. Gordon, Jr., Brooklyn.
121 Notes Taken from My First Five Years' Practice. P. M. Neary, Cortland.
122 Result of Campaign Against Venereal Diseases by Physicians' Organization. P. B. Brooks, Norwich.

116. **Value of Cholesterinemia in Chronic Nephritis.**—Those clinical factors which in Henes' opinion must be taken into consideration to correctly interpret cholesterinemia are: (1) fever. Fever exerts a profound influence in reducing the cholesterin content of the blood. Experience has shown the author that only temperature above 100 F. is to be looked on as fever, in this connection; (2) jaundice, especially when caused by obstruction, increases the cholesterin of the blood. With hemolytic jaundice Henes has had practically no experience; (3) arteriosclerosis. The measure of cholesterinemia has been found to be increased in cases of progressive arteriosclerosis; (4) edema and ascites. Transudates, the author has found, contain an appreciable amount of cholesterin, whether found in the chest, abdomen, or subcutaneous tissue; the amount found in transudates undoubtedly was, originally, in the circulating blood, and should be taken into consideration; (5) pregnancy must always be taken into consideration; there is a progressive increase of cholesterin in the blood as pregnancy advances; (6) gallstones, when aware of their presence; his results in cases of cholelithiasis has shown astounding increases over the normal cholesterinemia; (7) from a limited experience with obesity and diabetes, Henes is led to believe that a hypercholesterinemia exists in these conditions.

Pennsylvania Medical Journal, Athens

August, XVIII, No. 11, pp. 847-912

123 Adventures on Highways and Byways of Medical Research. J. McFarland, Philadelphia.
124 Study of Eight Hundred and Forty-Eight Cases of Tonsillectomy. G. D. Murray, Scranton.
125 Nose, Throat and Ear as Neighboring Organs to Teeth. W. R. Butt, Philadelphia.
126 Glaucoma in Young Myope with Atrophy of Iris and Bullous Keratitis. E. Stieren, Pittsburgh.
127 Congenital Coralliform Cataract. E. Stieren, Pittsburgh.
128 Case of Ectropion. E. Stieren, Pittsburgh.
129 Case of Congenital Malformation of Cornea. E. A. Weisser, Pittsburgh.
130 Case of Ocular Injury. J. E. Willetts, Pittsburgh.
131 Medical Economics. A. A. Long, York.
132 Relationship of Consultant to Practitioner. J. H. Comroe, York.
133 Treatment of Eclampsia. C. G. Strickland, Erie.
134 Sporadic Elephantiasis. G. C. Davis, Milton.

South Carolina Medical Association Journal, Anderson

August, XI, No. 8, pp. 238-270

135 Reflections on Modern Methods of Treatment by Serum and Vaccines. W. S. Thayer, Baltimore.
136 Contact in Diphtheria. G. M. Mood, Charleston.
137 Plague. J. H. Taylor, Columbia.
138 Backward Child. C. W. Kollock, Charleston.
139 What the Laboratory has Done, and is Doing for General Practitioner. G. A. Neuffer, Abbeville.

Southern Medical Journal, Mobile

September, VIII, No. 9, pp. 745-830

140 Diagnosis in Uncinariasis. J. L. Ward, Columbia, S. C.
141 Memoranda from Malarial Surveys and Demonstration Work. H. R. Carter, Baltimore.
142 Administration of Quinin in Malaria. H. Boyd, Scottsboro.
143 Malarial Anemia. S. C. Jamison, New Orleans.
144 Clinical Notes on Tuberculous Immunity. B. M. Randolph, Washington, D. C.
145 Early Diagnosis of Typhoid; Reference to Complications. W. A. Weed, Birmingham.
146 Three Groups of Late Syphilis. J. H. Smith and W. B. Porter, Richmond, Va.
147 *Treatment of Syphilis of Central Nervous System; Report of Cases. W. B. Porter and J. H. Smith, Richmond, Va.

148 Complement Deviation Test as Guide in Infections of Urethra, Prostate and Vesicles. T. V. Williamson, Norfolk, and S. W. Budd, Richmond, Va.
149 *Abdominal Anomalies; Report of Four Unusual Cases. F. G. DuBose, Selma.
150 Cases Illustrating Orthopedic Treatment of Some of Disabilities Resulting from Infantile Paralysis. M. Hoke and F. G. Hodgson, Atlanta, Ga.
151 Hare-Lip Surgery; Essentials in Production of Scarless Incisions. H. P. Cole, Mobile.
152 Roentgen Ray Studies of Appendix. J. W. Squires, Charlotte, N. C.
153 Treatment of Eclampsia. T. J. Tuder, Keokee, Va.
154 Retroperitoneal Tumors. C. S. Lawrence, Winston-Salem, N. C.
155 Case of Prostatectomy. G. P. LaRoque, Richmond, Va.
156 Enormous Congenital Umbilical Hernia without Cutaneous Covering, Operation and Recovery. S. R. Benedict, Birmingham.
157 Compound Fracture and Dislocation of Knee Joint. J. Crawford, Yale, Va.
158 Traumatic Emphysema and Empyema. E. T. Dickinson, Wilson, N. C.
159 Trachoma in Virginia. J. A. White, Richmond, Va.
160 Trachoma. C. R. Dufour, Washington, D. C.
161 Acute Purulent Otitis Media Complicated by Mastoiditis and Temporo-Sphenoidal Abscess. R. W. Bledsoe, Covington, Ky.

147. **Syphilis of Central Nervous System.**—Porter and Smith have modified the technic of Swift and Ellis somewhat, and feel that this modification simplifies the process. Instead of using 12 c.c. of serum, they use all that can be obtained from 40 c.c. of blood, withdrawn one hour after the intravenous injection of 0.6 gm. salvarsan. Prior to the subdural injection of the serum they withdraw 30 c.c. of spinal fluid. Instead of diluting the serum with saline, they dilute with as much of the spinal fluid as is necessary to make the total volume equal the amount of spinal fluid withdrawn. In eliminating the saline they do away with a possible source of contamination as well as simplify the technic.

149. **Abdominal Anomalies.**—DuBose cites the following cases: 1. Coexisting intra-uterine and extra-uterine pregnancy at term; living infants. 2. Misplacement of both kidneys, lying below brim of pelvis. 3. A 64 pound ovarian cyst. 4. Loose body in peritoneal cavity; an oval flattened disk one-half inch thick, three-fourths inch wide and 1¼ inches long, with a serofibrinous coating, making the surfaces smooth. The interior was of degenerated tissue. The uterus was exposed, the right ovary was absent and the distal half of the right tube was absent. From the posterior uterine wall running across the top of the right broad ligament and adherent to its anterior surface was a narrow and strong adhesive band. In DuBose's opinion, this loop of adhesive membrane, subsequent to the attack of pelvic inflammation, became wrapped around the ovary and the distal half of the tube and amputated them. The foreign body found was evidently the result.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

August 21, II, No. 2851, pp. 281-316

1 *Influence of Intravenous Injections of Neosalvarsan on Arterial Blood Pressure. H. D. Rolleston.
2 Typhus Epidemic in Serbia, 1915. T. G. Maitland.
3 *Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. C. H. Vrooman.
4 Our Present Position with Regard to Prescription of Proprietary Foods in Infant Feeding. H. C. Cameron.
5 Calculi of Prostate. R. L. Spittel.
6 Causes and Treatment of Severe Pruritus Ani. P. Lockhart-Mummery.

1. **Influence of Neosalvarsan on Blood Pressure.**—The blood pressure was investigated by Rolleston in a hundred consecutive cases in which neosalvarsan was given intravenously for syphilis in almost all in the secondary stage. The average age of the patients was 24 years, and except for twelve who were 30 years of age and over, and for six under 20, were all between 20 and 30 years of age. The amount of neosalvarsan varied between 0.9 and 0.6 gm. The blood pressure (systolic and diastolic) was taken (1) on one or more days before the injection was given, (2) about seven hours after the injection, and (3) on three or sometimes four subsequent mornings. In nineteen of these cases the blood pressure was also taken during the intravenous injection of neosalvarsan. Included in the 100 cases were twelve cases in which the blood pressure was investigated in connection with both first and second injections of neosalvarsan, usually at a month's interval. Mercer's sphygmomanometer, with an arm cuff of 14 cm. was used. The auscultatory method was employed, the maximum systolic pressure being estimated as the mean between the points in which the auscultatory sound disappeared and reappeared, and the diastolic pressure at the time of the so-called fourth phase, in which the intensity of the auscultatory sound suddenly diminishes. Rolleston took all the blood pressure estimations himself, so that errors from more than one personal equation were avoided.

In seventy-seven out of the 100 cases the intravenous injection was followed by a fall in both the systolic and diastolic pressures. The average fall of the systolic pressure was 16 mm. Hg, and of the diastolic pressure 13 mm. Hg. Out of the twenty-three remaining cases there were eight in which both the systolic and diastolic pressures were higher after than they were before the injection, the average increase in both the pressures being 11 mm. Hg; eight cases in which the systolic pressure was higher after than before injection (average increase 52 mm. Hg), while the diastolic pressure was lower after than before injection (average fall 6.5 mm. Hg); six cases in which the diastolic pressure after was higher than before injection (average increase 4.5 mm. Hg), while the systolic pressure after was lower than before injection (average fall 8 mm. Hg); and one case in which both the systolic and diastolic pressures were the same before and after injection. In the systolic blood pressure there was a fall in eighty-three cases, as compared with a rise in sixteen, or in the proportion of 5 to 1. The average fall in the systolic pressure was 15.4 mm. Hg. In the diastolic blood pressure there was a fall in eighty-five cases, as compared with a rise in fourteen, or in the proportion of 6 to 1. The average fall in the diastolic pressure was 12.4 mm. Hg. The fall was therefore slightly less in the diastolic than in the systolic blood pressure.

Rolleston concludes his paper as follows: The average of both the systolic and diastolic blood pressures on the days after injection is generally lower than before injection, the fall in the systolic being slightly more marked than in the diastolic pressure. This fall, however, is probably not a direct result of the action of neosalvarsan, and, in part at least, may be due to rest in bed. The blood pressure seven hours after the intravenous injection of neosalvarsan is usually lower than it was before. The fall in the diastolic pressure is slightly less than that of the systolic pressure. The fall cannot be explained as due to fever. As compared with the blood pressure taken seven hours after the intravenous injection of neosalvarsan, the average of the blood pressure estimations on subsequent days is usually lower. This is more marked in the diastolic than in the systolic blood pressure. During the actual intravenous injection of neosalvarsan both the systolic and diastolic pressures are nearly always higher than on other occasions. This appears to be due to excitement. During the operation the pressures may vary considerably, the systolic blood pressure being more affected than the diastolic. The blood pressure before the first injection of neosalvarsan is nearly always higher than the blood pressure before the second injection of neosalvarsan, but here again mental excitement may be responsible. Finally, the general effect of intravenous injections of neosalvarsan is rather to lower, certainly not to increase, the arterial blood pressure.

3. **Artificial Pneumothorax in Treatment of Tuberculosis.**—According to Vrooman, artificial pneumothorax is a valuable addition to methods of treating tuberculosis, but unfortunately its application is restricted to not more than 5 per cent. of cases.

Journal of Tropical Medicine and Hygiene, London

August 16, XVIII, No. 16, pp. 181-192

7 Cure of Amebic Dysentery. A. J. Chalmers and R. G. Archibald.
8 Has Monowheel Stretcher Carriage Possibilities? J. A. Haran.
9 Case of Fibrosarcoma Four Years after Operation. A. Y. Massey.

Lancet, London

August 21, II, No. 4799, pp. 371-426

10 *New Theory of Causation of Enterostasis. A. Keith.
11 Bacteriology of Gas Gangrene. A. Fleming.
12 *Bacteriology of Peritoneal Exudate in Cases of Perforation of Stomach and Duodenum. L. S. Dudgeon and B. C. Maybury.
13 Atypical Epidemic with Note on Evolutionary Etiologic Factors in Disease. J. T. C. Nash.
14 Epidemic of Acute Hydrocele and Orchitis in British East Africa. L. Nicholls.
15 Temporary Blindness from Penetrating Bullet Wound of Occipital Lobe. A. E. Moore.
16 *New Sign and Its Value in Diagnosis of Pulmonary Tubercle. C. Riviere.

August 28, II, No. 4800, pp. 427-528

17 Students' Number.

10. **New Theory of Causation of Enterostasis.**—In passing along the alimentary tract, Keith states, food is propelled through a series of zones or segments, each furnished with its own pacemaker and its own rhythmical contractions. In the heart one finds two such zones, an auricular and a ventricular; in the normal heart the sino-auricular node is the master pacemaker. Irregularities of the same kind as are known to occur in the heart may occur in the nodal and conducting system of the alimentary canal. When such irregularities or blocks do occur one would expect to find them at the points in which one rhythmical zone or area passes into the succeeding zone. That is exactly what occurs. One finds a block in which the esophagus joins the stomach; another in which the gastric zone ends and the duodenal begins; in cases in which the duodenal zone passes into jejunal and in cases in which the jejuno-iliac passes into the ileocolic, a block may occur at any point of passage from a lower to a higher rhythm. At several of these junctional joints sphincters are situated and Keith admits the mechanism of such sphincters may become disordered and cause stasis of the alimentary contents, but, he says, it will probably be found that a disturbance in the action of a sphincter is but part of the disturbance which affects the entire rhythmical segment to which its belongs.

To obtain an orderly propulsion of the food along the whole length of the alimentary canal those various rhythmical zones must be closely coordinated in their action, and there is a growing body of evidence, both experimental and clinical, that points to a close coordination by means of a complicated system of reflexes. Disturbance in any one segment upsets the rhythm in all the segments. Disturbance in the excitability and rhythm of the pacemaker of the cecum will be reflected to the lower ileum. One can understand how stasis in the great bowel may be followed by ileal stasis, duodenal or gastric stasis, or how a disturbance of the conductivity or excitability of any of the rhythmical zones may ultimately give rise to stasis in all.

12. **Bacteriology of Peritoneal Exudate.**—The actual result of the examination of films by Dudgeon and Maybury of the peritoneal exudate in twenty-three cases showed absence of bacteria in thirteen and a positive finding in ten, while of these ten cases cocci represented as diplococci or streptococci were seen in each instance, and bacilli also in two cases which proved to be fatal. In two cases the *Bacillus coli*, together with streptococci were cultivated from the peritoneal exudate. Streptococci, however, have occurred more frequently than any other bacteria.

16. **Diagnosis of Pulmonary Tubercle.**—Riviere states that in pulmonary tuberculosis characteristic bands of percussion impairment of constant position, shape, and size are present over both lungs. These are found by skilful percussion, before any other sign of phthisis, in certain cases before symptoms, and persist throughout the course of the disease. They depend on no morbid structural changes, but are of reflex origin; though absent in health they can be produced by appropriate means in any normal chest. Their persistent presence denotes an irritation (always inflammation?) of the lung parenchyma of some causation not necessarily tuberculous. Incidentally they are of notable value in the diagnosis of phthisis. They will help to decide the presence or absence of a hidden focus in a case suspected of early tubercle, and they are useful in the exclusion of all catarrhal conditions not involving the lung parenchyma. Their reflex nature serves to explain the occurrence, unintelligible on other grounds, of percussion impairment in the earliest stages of pulmonary tuberculosis.

Gentle percussion is needed for the recognition of these bands in cases of early disease. A change of pitch in the percussion note is by far the surest guide to their presence; the element of "expectation," so liable to delude the ear, must be rigidly excluded. Percussion should proceed from resonance to dulness, and the stroke should be delivered with the right middle finger on a plexímeter finger (left index finger) pressed firmly on the chest wall parallel to the dull area; when the lower limit of the band has been found by percussion from below upward this should be marked with a skin pencil, and the upper limit looked for by percussion from above downward toward it. An important change of percussion note occurs between inspiration and expiration in the normal chest, and to a somewhat lesser degree in phthisis, the note being lower-pitched and more resonant during the latter phase. If any difficulty is experienced on this account, and this is likely to occur, the breathing should be arrested (without taking a forced inspiration) while percussion is proceeding. When the limits of the area have been pencilled the value of the observation should be checked by counting the vertebral spines down from the first dorsal (indicated by marking the upper limit of the lung resonance) to see whether the band obtained lies between the fifth and seventh spines or thereabouts, the level at which this lower dull area invariably falls.

In children the bands are most easily detected by percussion over both lungs at once, with the plexímeter finger laid right across the spine so as to cover the innermost end of each band of impairment. Percussion then proceeds from below upward till the lower border is found and marked and then from above downward to find the upper border. The same method is often convenient in adults also, but care must be taken in cases in which the vertebral spines are prominent, lest these press against the plexímeter finger and obscure the result by the introduction of bone conduction. The apical area is best appreciated by percussion upward with the plexímeter finger stretched across Krönig's area and pressed firmly against the chest wall. Normally the percussion note becomes lower and lower pitched as the top of the shoulder is ascended, but when the bands of impairment are present, a sudden rise of note occurs when the level of the first or second dorsal spine is reached.

Sei-I-Kwai Medical Journal, Tokyo

August, XXXIV, No. 8, pp. 41-44

18 Plastic Operation of Vagina and Case Operated on by Mori's Method. T. Hirano.
19 Death of Prisoners from Tuberculosis. Y. Furuse.
20 Roentgen Ray and Radium Treatment in Gynecology. K. Kurihara.
21 Vaccine Treatment of Whooping Cough. N. Honjo.
22 Some Spontaneous Fractures. R. Yajima.

Bulletin de l'Académie de Médecine, Paris

August 10, LXXIV, No. 32, pp. 139-188

23 Braces and Other Devices to Correct Paralysis. (Appareils pour "blessés nerveux.") P. Marie, H. Meige, A. Léri and D. Bouveret.
24 Mixed Vaccines. F. Widal. See Abstr. 47.
25 Treatment of Fracture of Lower Jaw. (Méthode directrice rationnelle dans le traitement des fractures du maxillaire inférieur.) Cavalié.
26 Compass for Localization of Projectiles. Debierne.
27 Experimental Research on Colloidal Gold. H. Busquet.
28 *Success of Specific Bacteriotherapy in Cholera in the Campaign in Serbia. Petrovitch.

August 17, No. 33, pp. 189-203

29 Adjustable Crutch. (Béquille rationnelle.) A. Pinard.
30 Mixed Vaccines against Typhoid and Paratyphoid. H. Vincent.
31 Attenuation of Pulse above Aneurysm. (Signe nouveau des anévrismes.) Couteaud.
32 Ligation of Veins above Suppurating Wounds in Limbs. (Les ligatures veineuses dans les infections pyohémiques des membres.) R. Le Fort.

33 Contracture and Spasms with Injury of Nerves and Retention of Foreign Body. (Accidents pseudo-tétaniques chez des blessés atteints de lésions des nerfs compliquées de la présence de corps étrangers.) R. Le Fort. See Paris Letter, p. 1042.

28. **Treatment of Cholera with Vaccines.**—Petrovitch reports that during the campaign in Serbia last August he treated cholera patients with Wright's anticholera vaccine and vaccine from the Paris Institut Pasteur. Benefit was apparent in every instance, he states, and the mortality was notably reduced. In the 1,153 mild cases all recovered except 2 patients who were too debilitated by privations of all kinds to regain their strength and died the eighth and fifteenth days of their convalescence. None died of 90 cases of medium intensity, while the mortality was 9.4 per cent. in a similar group not given vaccine treatment. In the 157 cases of extremely severe cholera, the mortality was 14.4 per cent. while it was 58 per cent. in a corresponding group of 120 cases given the ordinary treatment. He diluted the vaccine 1:10 or 1:50 with physiologic salt solution; the dose was from 0.5 to 3 c.c. of this dilution. He repeated the dose two or three times or more during the day in the severer cases, and he increased the amount of saline infused with the vaccine.

Bulletins de la Société de Pédiatrie, Paris

June, 1914, XVI, No. 6, pp. 329-424. Last indexed July 11, 1914, p. 202

34 Social Service in Children's Hospital at Paris. Nageotte-Wilbouchewitch.
35 *Acute Encephalitis in Children. J. Comby.
36 *The Blood Dust and the Bile Pigments and Salts in Infants' Stools. (Hémoconies, réactions des pigments et des sels biliaires dans les fèces des nourrissons.) Nobécourt and M. Maillet.
37 *Diseased Glands in Iliac Fossa Simulating Coxalgia. Savariaud.
38 *Sugar in Infant Feeding in Pathologic Conditions. (Résultats de l'alimentation sucrée des nourrissons malades.) Nobécourt and L. Nadal.
39 Total Intolerance for Starch in Ten-Months' Infant. (Intolérance pour les farines chez un bébé.) Nobécourt and Philippon.
40 Liquid Petrolatum in Treatment of Constipation in Infants and Children. (L'huile de paraffine dans le traitement de la constipation.) G. Schreiber.
41 Experimental Beriberi in Pigeons Fed Exclusively on Husked Barley. (Recherches sur les maladies alimentaires par "carence.") Weill and Mouriquand.
42 Advantages of Reduction of Congenital Dislocation of Hip Joint before Age of 2. Lance.
43 Lesions or Deformities Accompanying Congenital Hemispasm of the Lower Lip. G. Variot and F. Cailliau.
44 Exophthalmic Goiter in Girl under 9. P. S. Moret and Saison.
45 *Liability to Recurrence of Tendency to Hemorrhages in Children after Apparent Cure. (Etats hémorragipares dans la seconde enfance.) H. Triboulet, J. Rolland and Buc.

35. **Acute Encephalitis in Children.**—Comby insists that essential epilepsy, developing in a child without provocation or apparent cause, is not an inherited affection. It is not a family taint to be feared as a mysterious, inexorable evil, inevitably to be handed on from parents to children. This old idea must be abandoned and epilepsy recognized for what it is, namely, an acquired, accidental malady, the relics, most commonly, of an encephalitis. It is neither inherited nor transmissible. Chorea is another neurosis of the same character. It is likewise the expression of a mild, acute, curable encephalitis of infectious origin. Almost any infectious disease may provoke it; they all act by the intermediation of the brain as they attack some part of it. The course with epilepsy of this type is generally as in a case which he describes: At the age of 4 there was acute encephalitis from which the child apparently completely recovered. At 14 epileptiform convulsions developed and have recurred at intervals since. The girl at 18 is strong, intelligent and normal except for the epilepsy, and there is no history of epilepsy in the family. He emphasizes that acute encephalitis is more common than generally believed. Before the days of lumbar puncture it was generally labeled meningitis, but now we can distinguish between these, as with acute encephalitis the fluid is free from cells. Simple nonsuppurating, acute encephalitis may be localized or diffuse, and may occur at any age. Many cases of idiocy date from an acute encephalitis before or after birth. In two cases of pathologic febrile pregnancy the children were born with fever and nervous symptoms and grew up idiots. Thus we see that acquired and even congenital idiocy is not always a sign of a family taint. It may be the result of some accidental malady, some infection that may attack the healthiest families.

36. **Hemoconiae in the Blood in Relation to Bile Salts in the Stools of Infants.**—The findings are tabulated in eleven cases according to the proportion of hemoconiae in the blood, the weight, the diet, character of the stools and the content in bile pigment and bile salts. No constant parallelism between the blood dust and the bile salts in the stools was evident, and this is accepted as testifying to the fact that other factors besides the bile share in the digestion and absorption of fats.

37. **Glandular Disease in Iliac Fossa Simulating Hip-Joint Disease.**—Savariaud gives the details of two cases to illustrate the difficulty in differentiating this glandular trouble in some cases. The acute febrile process in the iliac glands caused signs of psoitis and periarticular contracture, suggesting in every respect hip-joint disease. Continuous extension and repose, and the rapid subsidence of all symptoms in the course of a few weeks cleared up the diagnosis. Study of these and similar cases shows that the idea of hip-joint disease can be dropped if there is no pain at night and in walking, and if the child limps less as it exercises. Also if there is no restriction to the movements of abduction and rotation and no pain from pressure on the back of the joint, and no signs of bone disease on roentgenoscopy.

38. **Sugar for Sick Infants.**—Nobécourt and Nadal here report the results of adding 10 per cent. ordinary sugar (saccharose), to the food the infants were getting. This was rice-water, buttermilk, milk, kefir or pea or bean broth in thirty cases described in detail. This large amount of sugar seemed to be instrumental in promptly arresting a tendency to excessive vomiting in two of four cases. In sixteen much debilitated infants or backward in developing, the high sugar content was generally well tolerated and in eight of the cases aided in a rapid and progressive increase in weight. One babe of 10 months was unable to take starch in any form but thrived well on the highly sweetened milk. Another child whom they describe as an "azotemic athrepsic," grew into vigorous health in a few months on the highly sweetened milk. No sugar was ever found in the stools or urine. In the eight other cases the cachexia continued unmodified. Six infants with acute dyspepsia took the sugar well and rapidly recovered. Other infants with bronchitis and other affections took the sugar well and it seemed to have a favorable influence on the course. No signs of intolerance of the sugar were observed in any of the infants. As a rule, the stools lose their diarrheic character. The sugar evidently sustains the strength and combats the destruction of tissues.

45. **Pseudohemophilia in Children.**—Triboulet refers to cases of intense anemia, with purpuric phenomena but coagulation normal, in schoolchildren. He reports a case to emphasize the necessity for being cautious in calling such a child "cured," even when years may have elapsed since the last manifestations. In this case the recurring attack followed a five weeks' stay at a seaside resort; the longest free interval was after a trip to the mountains. Dufour remarked in the discussion that he had sometimes been successful in such cases in utilizing anaphylactic effects as a systematic method of treatment.

Journal de Chirurgie, Paris

August, XIII, No. 3, pp. 241-528

46 *Operative Treatment of Skull Wounds in Field Ambulance. (Traitement opératoire des blessures du crâne dans une ambulance de l'avant.) A. Lapointe.

46. **Wounds of the Skull.**—Lapointe has operated in nearly 127 cases of wounds of the skull and has been impressed with the remarkable harmlessness of the wounds when the dura was not opened. On the other hand, the wounds involving the brain proved fatal in 58.75 per cent. of the 80 cases in this group. This grave outcome was due to infection in nearly every instance, and for this the inadequacy of the first-aid measures was generally responsible.

When the hair is close cropped or the scalp around the wound is shaved there is much less chance of infection, but he often found the hair long and matted with dried blood. The wounded did not reach the ambulance in his charge until the second or third day as a rule; only twenty-two were received the same day as the injury. The various types of skull wounds encountered are discussed in turn and the appropriate treatment.

Presse Médicale, Paris

August 19, XXIII, No. 38, pp. 305-312

47 *Mixed Antityphoid and Antiparatyphoid Vaccines. F. Widal.

47. Vaccine Against Both Typhoid and Paratyphoid Infection.—Widal studied the effect of the combined vaccine, noting especially the development of the agglutinins and of the sensitizers, in the blood of sixteen persons inoculated with the double and five with the triple vaccine. He regards the data presented as very encouraging.

Revue Médicale de la Suisse Romande, Geneva

August, XXXV, No. 8, pp. 413-468

48 *Micro-Analysis of the Urea in the Blood. Combe and M. Lévi.
49 Necropsy Findings in Case of Diffuse Peritonitis from Perforation of Diverticulum in Sigmoid Flexure. E. Kummer.
50 *Sunlight in Treatment of Children's Diseases. (De l'Héliothérapie dans un hôpital d'enfants en plaine.) L. Jeanneret.
51 *Suspension from Pole, with Extension, in Treatment of Fractured Leg. (De la méthode serbo-croate pour réduire les fractures du fémur et de la jambe.) A. Jentzer.
52 Alum Coating of Tube Cures Lesions from Prolonged Intubation. (Cas d'intubation prolongée guéri par l'introduction d'un tube enduit d'alun.) H. Mallet.

48. The Urea Content of the Blood.—Combe defines the difference between modern medicine of the day and of twenty years ago as the difference between pathologic physiology and pathologic anatomy. Twenty years ago the lesion was the main thing considered. Now we consider, along with the lesion, the way in which the organ and the organism adapt themselves to the lesion, and how we can help them to overcome its effects and compensate for missing functioning. In our study of this pathologic physiology, analysis of the blood is becoming more and more important, as the sugar and acidity of the blood in diabetes, the amino acids and cholesterol in liver disease, the uric acid in gout, and the urea and chlorids in kidney disease—all throw light on the pathologic processes involved. The great drawback to research on the blood is that from 10 to 20 c.c. of blood is required for most of the tests, and this practically excludes their application to children. Bang's method of micro-analysis for sugar requires only two drops of blood, and Combe and his co-workers have devised a similar technic with which it is possible to estimate from only 2 drops of blood the content in sodium chlorid, phosphoric acid, potassium, iron, or albumin. It is hoped to perfect the technic so that with it we may estimate further the calcium content, lactic acid, the amino acids and the alkalinity and acidity of the blood.

Combe and Lévi here describe in detail their "micro-method" for determining the urea content of the blood, and the findings on applying the test to the whole blood of 37 normal children from 6 to 14 years old. The maximum urea content to the liter was found to be 0.27 gm.; the minimum 0.16; the average 0.22; average for the serum alone, 0.27. In 25 children from 1 to 6 years old, 0.26 to 0.16; average 0.21; serum alone, 0.26. In 9 infants from 15 days to 12 months old, the range was from 0.24 to 0.16, average 0.19; serum alone, 0.23, and in 5 infants younger than this, from 0.25 to 0.14; average 0.17; serum alone, 0.21 urea to the liter. It was found that the urea of the serum could be estimated by multiplying the urea of the blood by 1.25.

The 2 drops of blood are drawn most conveniently, after scarifying, with the aid of a suction glass and bulb, the glass opening air-tight into a test tube below containing a little distilled water with a few drops of sodium citrate. In this way they obtain the 2 drops of blood needed, with an error margin of less than 1 per cent. This micromethod is based on the chemical combinations which urea forms with mercuric nitrate. The method is somewhat similar to Liebig's old technic which has acquired new scientific importance since Robertson published his technic for volumetric titration of minute quantities of mercury. Comparison with other tests, both in the laboratory and in the clinic, have apparently demonstrated beyond question the reliability of this method of micro-analysis of the blood.

50. Heliotherapy in Children's Hospital.—Jeanneret states that notwithstanding the city environment, great progress has been realized with heliotherapy in tuberculous affections in children at the Children's Hospital at Basel. He emphasizes further the remarkable effect of direct sunlight as a general stimulant and strength producer in nearly all sick children and in all convalescents. The sunlight, he says, seems to act especially on the musculature, strengthening it and providing conditions for favorable development. Doughy flesh grows hard and firm. The benefit from heliotherapy, he insists, is by no means limited to tuberculous affections; "the sun is the tonic par excellence, the ideal remedy for all debility in children. The child reacts to the sun like a plant that has grown white in the cellar, and just as the plant renews its chlorophyl supply and turns green, the child becomes transformed, renews its hemoglobin supply, and its skin and mucous membranes resume the hue of health." Jeanneret has served with Rollier at Leysin and he affirms that the sunlight cures tuberculosis at Basel just as well as at Leysin in the mountains, but to obtain equivalent results the course of treatment has to be twice as long. There are fewer days of sunshine, and during winter days without sunshine some of what has been gained is lost. The sunlight is less powerful than in the mountains as the denser atmosphere absorbs some of the rays. The action of the mountain climate on the blood-producing apparatus is also lacking, and, last but not least, the heat at Basel in summer renders the sunbaths enervating rather than stimulating, compelling the shortening of the exposures.

But after making all the above allowances, with time and patience, he declares, tuberculous bone lesions can be cured without going to the mountains. He comments on the drawbacks of keeping children a long time in city hospitals, and urges that the hospital should have an annex in the mountains where the children can be sent and cured in half the time. The exposures are commenced gradually, two for five minutes the first day, increasing to two for sixty minutes by the seventh day, and two for three hours by the twelfth. Exposures to the sunlight of February, for example, are made six or seven times as long as to the July sunlight. No mishaps have ever been observed; the greatest care is taken to prevent sunburn and itching.

Heliotherapy did not give brilliant results until the exposures were made general, and Rollier was the one to introduce this active and useful general heliotherapy. Jeanneret ascribes its action to the perfect functioning of the skin which it induces, promoting cutaneous respiration and elimination, and stimulating the skin at the same time, thus intensifying the defensive functions of the epithelial cells.

51. Serbian Method of Treating Fractures.—The limb is suspended from a bar fastened to the head of the bed and to a higher board standing upright at the foot. The suspension is with two, three or four triangular bandages, and the knee is slightly flexed. Extension can be thus applied in semiflexion; the suspension avoids danger of decubitus; dressings can be changed, and the bed pan used more conveniently, and the immobilization of the limb is not complete so that there is less danger of stiff joints. A still further advantage is that the semiflexion relaxes the muscles, and the fractured bones fit back into place more readily; hence the amount of traction can be much less than with other technics, while the limb heals with less shortening. Jentzer studied the method in Serbia and has been using it with constant satisfaction since his return to Switzerland.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 14, XLV, No. 33, pp. 1025-1056

53 *Diagnosis and Treatment of Suppuration in the Nasal Accessory Cavities. (Nasenhöhlenentzündungen.) F. Diebold.

August 21, No. 34, pp. 1057-1088

54 *Winckel's Disease in Two Infants in One Family. (Ueber familiäres Auftreten von Bluterkrankungen im Kindesalter.) F. Brandenberg.

53. **Suppuration in the Nasal Accessory Cavities.**—Diebold discusses the diagnosis in detail and emphasizes the great value of a stain as an aid in detecting pus and in locating its source. He has found hexaethyl violet (hexaethyl rosanilin chlorid) best adapted for the purpose, and has examined 107 patients with it, thus locating sinusitis in 122 of the accessory cavities. The stain aids further in softening up the thick secretion in the sinus, and the fetor is notably reduced even by one application. This stain does not dissolve readily in salt solution or blood, and hence there is no danger of toxic action. It is in a solid form; a small piece is melted on the end of a probe and introduced into the cavity in question. As it lies on the floor of the cavity, a single grain, not more than half a millimeter in diameter, will stain all the secretions accumulating there. The thicker the secretions, the longer before the crystals dissolve. The tint is usually most intense from the third to the sixth day but it may be still apparent by the sixth week. By this means the source of the secretion can be infallibly located. The method has proved very instructive in several cases of sinusitis complicated with lesions of the jaws or palate.

54. **Familial Disease of the Blood in Children.**—Brandenberg does not know of any other instance on record like the one he reports in which, in turn, in the same family, two apparently healthy, vigorous children developed Winckel's disease and died about a week after birth. In another family five girls developed normally but the four boys all died with symptoms of leukemia, confirmed by necropsy in two cases. Some of the cases of Winckel's disease on record developed in the form of small epidemics in maternities, but none is known previously of familial occurrence. He explains the disease as the result of hemolysis from some infection or toxin.

Deutsche medizinische Wochenschrift, Berlin

August 12, XLI, No. 33, pp. 965-996

55 Action as Antigens of Sensitized and Nonsensitized Blood Cells and Typhoid Bacteria. L. v. Liebermann and D. Acel.
56 Treatment of Typhoid with Besredka's Vaccine. E. Saecsy.
57 Complications of Wounds of the Lungs. (Hemothorax und Zwerchfellverwachsungen bei penetrierenden Brustverletzungen.) S. Kaminer and H. Zondek.
58 Fat Metabolism of the Cell, Tested by the Fat-Partial Antigens of the Tubercle Bacillus. H. Much and W. Müller.
59 *Epidural Injection. W. Enderle.
60 *Phosphaturia. L. Dünner.
61 *Analysis of Published Deaths Following Salvarsan. (Ueber Todesfälle nach Salvarsan.) B. Fischer. Commenced in No. 32.
62 Exclusive Salvarsan Treatment of Syphilis. R. Krefting.
63 Technic for Obtaining Blood from Rabbit. T. A. Venema.
64 Abdominal Wounds. (Zur Frage der Bauchschüsse.) Wieting Pasha.
65 Hard Traumatic Edema of Back of Hand. L. Levy.

59. **Epidural Injections.**—Enderle extols the advantages of injection of 20 c.c. of physiologic salt solution through the sacral hiatus as a reliable method for treating all forms of neuralgia in the legs, enuresis in children, and all functional disturbances of the urogenital system. It is so simple and harmless, he adds, that it is worth a trial even in gastric crises. The patient has to be in the knee-elbow position, and he gives four illustrations showing the exact anatomy of the region and the technic for the injections. He has been using this method for several years, and reports success in 90 per cent. of the cases. He ascribes the benefit to direct compression of the nerve plus a modification of the conditions of osmosis.

60. **Phosphaturia.**—Dünner found pronounced phosphaturia in a boy of 12 during an attack of polyneuritis, and both these disappeared together. In another case of polyneuritis, in a man of 29, there was also pronounced phosphaturia. At the height of his trouble 0.9 gm. lime was eliminated in the urine during the twenty-four hours, but subsided to 0.22 as the polyneuritis disappeared. The neurasthenia of patients with phosphaturia should receive proper treatment; the neurasthenia once conquered, the urine returns to normal, demonstrating anew the dependence of phosphaturia on conditions in the nervous system. In treatment, suggestion, change of scene, and food rich in fats are useful. Sodium bicarbonate is directly contraindicated, but it is possible that kaolin, charcoal or bismuth might benefit, as in hyperacidity of the stomach; this at least renders conditions less favorable for precipitation of the calcium in the urine, and thus it is harmlessly voided dissolved in the urine. He emphasizes the importance of distinguishing between phosphaturia and abnormal conditions in regard to acidity. The chief danger with phosphaturia is the formation of kidney stones. A lime-poor diet is advisable, and also copious drinking of water, avoiding alkaline waters. If we can succeed in increasing the acidity of the urine, even although we are unable to reduce the output of the phosphates, much is gained.

61. **Deaths Following Salvarsan.**—The first part of Fischer's article was reviewed in these columns Sept. 11, p. 985. His study of fatalities after the use of salvarsan has shown that in many instances some unsuspected disease was responsible for the fatality. In one case chemical investigation revealed evidences of mercurial poisoning, and this may have been responsible for the trouble in other cases. There is no evidence to date, he declares, that salvarsan has a toxic action on the liver cells. Acute yellow atrophy of the liver is the result of the syphilis itself, and is not the work of salvarsan. The toxic action of salvarsan does not correspond to the clinical picture of arsenic poisoning. The only injuries from salvarsan actually demonstrated to date are local necrosis at the point of the injection, and hemorrhagic encephalitis. The evidence to date exonerates salvarsan from all the other mishaps that have been credited to it.

Jahrbuch für Kinderheilkunde, Berlin

August, LXXXII, No. 2, pp. 87-174

66 Roentgen Examination of the Large Intestine in Infants and Children. (Die Röntgen-Untersuchungsergebnisse des Dickdarms im Säuglings- und im späteren Kindesalter.) I. Peteri.
67 *Thickness of the Abdominal Wall as Index of the State of Nourishment in Sick and Healthy Children. (Die Dicke des Fettpolsters bei Kindern.) S. Batkin.
68 Conditional Reflexes as Factors in Nodding Spasm in Children. (Erklärung der Entstehungsweise des Spasmus nutans beim Kinde mit Hilfe des Bedingungsreflexes.) J. Vas.
69 Otitis Media in Relation to Infant Pathology. (Beziehung der Mittelohrentzündung zu den Krankheiten des Säuglingsalters.) F. Scherer and O. Kutvirt.

67. **Thickness of Abdominal Wall as Index of State of Nourishment in Children.**—THE JOURNAL has called attention at other times to Oeder's index, the thickness of the layer of adipose tissue in the abdominal wall as a fold is taken up to the right of the umbilicus and its thickness measured with calipers. Batkin reports here the findings in 1,600 measurements made on 200 children, including forty-six newly born and twenty-seven healthy children. For better comparison, measurements were made also of a fold taken up on the arm, thigh, chin, etc. His research was undertaken to supply a standard for comparison of the "padding of fat" in health and in some of the more common diseases. It was remarkable in many instances how the eye was deceived in regard to the actual padding of fat, as shown by the correct caliper measurements and necropsy findings. The caliper index is not only an objective sign of the actual state of nourishment of the individual but shows its modification by age and disease and during recovery from sickness and permits comparison with other individuals and may thus warn when things are going wrong. But it is not a decisive criterion, merely a useful and convenient minor aid in our study of normal and pathologic physiology.

Münchener medizinische Wochenschrift, Munich

August 10, LXII, No. 32, pp. 1073-1104

70 *Influenza. P. C. C. Hübschmann.
71 Simple Method for Estimating the Nitrogen in the Urine. V. C. Myers (New York).
72 *Detection of Focal Reaction after Tuberculin Test. (Symptom zur Feststellung der Herdreaktion in der Lunge nach Tuberkulinimpfung.) M. v. Litzner.

73 Analysis of the Action of Nonspecific Measures in Surgical Tuberculosis. W. Müller.
74 Healing of Parenchymatous Keratitis under Salvarsan; Three Cases. Koenig.
75 Technic for Estimation of Complete Homonymous Right Hemianopsia. W. P. Reitsch.
76 Phenomena in the Circulatory Apparatus during Convalescence from Typhoid. F. M. Groedel.
77 Organic Injury of the Nervous Apparatus of the Ear in War. J. Zange.
78 Wire Extension Triangle for Fracture of the Upper Arm. E. Berchers.
79 Prognosis after Skull Wounds. (Schädelschüsse.) G. Engelhardt.
80 *Aid in Electric Treatment. (Individuelle Dauermarken für die elektrische Behandlung.) O. Stracker.
81 Tetanus Localized in Left Lumbar Plexus. U. Hammer.
82 Extension after Fracture of the Thigh in War. Roschke.
83 *Stool Obtainer. (Schnellere Methode der Stuhlentnahme bei Massenuntersuchungen auf Bazillenträger.) H. Ziemann.

70. **Influenza Epidemic.**—Hübschmann writes from Leipzig to the effect that he found recently in seventy of 110 cadavers micro-organisms which were apparently true influenza bacilli. They were in pure cultures in 31 per cent. that is, in nearly 30 per cent. of the entire number. The actual number is probably higher than this as the influenza bacillus is frail. In many cases of lung and brain affections it was the only germ found. He examined only cases with bronchitis, and was forced to the conclusion that infection with the influenza bacillus is prevailing in epidemic form and that the death rate is high. His data, he thinks, form a new link in the chain of evidence as to the causal importance of Pfeiffer's bacillus as the agent of epidemic influenza.

72. **The Focal Reaction to Tuberculin.**—Litzner long ago called attention to the fact that persons with an unstable nervous system, especially girls, are liable to react with higher temperature to an injection of tuberculin or even to a sham injection. A febrile reaction to tuberculin is thus not necessarily a sign of tuberculosis. On the other hand, with actual tuberculosis there may be a pronounced focal without a general reaction. This possibility should warn against ambulant tuberculin treatment. The focal reaction is hence the one of paramount importance, and he has found that it could be detected and estimated best by the change in the bronchophony, or, to use a more exact term, broncholoquy. The serous infiltration and hyperemia of the focus from the reaction localized in the focus provide better conditions for the transmission of the whispering voice. Before applying the tuberculin test he examines conditions as to bronchophony and then again after the test, as also each time after giving the tuberculin in a course of treatment. As the patient whispers sibilant numbers auscultation reveals the focal reaction when possibly nothing else could have permitted its detection. This sign has never failed him in the years he has been watching for it, and he urges others to try it and endorse it if their experience confirms his.

80. **Guide for Electric Treatment after Injury of Nerves.**—Stracker has found it impossible to mark the skin so that the marks would not wash off, or else they entailed suppuration in the sensitive skin. Such numbers of wounded men with severe injury of nerves require electric treatment at Vienna now that he finally hit on the use of the tattooing needle to mark the skin, and has been much pleased with the way it works. The imprint of the bunch of three or four needles at one time is not felt as a prick, and the point is indelibly marked. Each patient has a chart showing two arms and the corresponding points are marked on the chart; each point is accompanied with a figure showing the number of milliamperes required to excite the muscle at this point. Besides the saving of time, labor and avoidance of mistakes with this method, it has the advantage that this important task of electric treatment can afterward be safely left in the hands of a conscientious nurse.

83. **Stool Holder for Proctologic Examination.**—A stout glass test-tube, 28 cm. long and 1.5 cm. thick, has a small oval opening in one side not far from the rounded end. This end is introduced into the rectum and some of the stool within is scooped up into the tube. With a few dozens of these little tubes the search for bacilli carriers among the troops is much facilitated.

Therapie der Gegenwart, Berlin

August, LVI, No. 8, pp. 281-320

84 Treatment of Eclampsia. J. Veit.
85 *Linseed, Fleaseed and Other Mucilage-Containing Seeds in Treatment of Constipation. (Schleimhaltige Pflanzensamen gegen Verstopfung.) O. Kohnstamm and M. Oppenheimer.
86 Bacteriologic Diagnosis in Field Laboratory. W. Oettinger.
87 *Pure Salicylic Acid in Treatment of Acute Articular Rheumatism. J. Zadek. Commenced in No. 7.
88 Bread in Wartime. (Brot in Kriegszeiten.) G. A. Waetzoldt.

85. **Treatment of Constipation.**—Kohnstamm combats constipation by having all meat, fish and poultry dropped from the diet and their place taken by milk and dishes made with milk, cocoa, milk soups, etc. Meat soups and broths can be taken, and aid in the digestion of the vegetables and milk dishes. He declares that on this diet constipation refractory for years or decades can be conquered once for all in from one to four days. After one or two weeks meat can be resumed once a day, especially white meat. He regards meat as the cause of the constipation, and it is sometimes necessary to drop all meat for a time once in a while. His aim is to substitute for the meat-putrefaction flora a milk-fermentation flora which usually continues to keep the upper hand on resumption of meat in the diet. In case the milk dishes and vegetables cause a tendency to flatulency which might be dangerous for the elderly or others with cardiovascular disturbance, and when it is necessary to hasten the emptying of the bowels, or it is impossible to procure milk—under these conditions he combats the constipation with mucilage-containing seeds. Notwithstanding the age-long use of linseed and fleaseed for various purposes, he does not know of their being used to combat constipation, but he has found them very useful in this line. The intestines do not seem to become habituated to them. As they are tasteless, they can be taken in any soup or other dish, and they never seem to cause irritation, while they lubricate as they pass along and facilitate peristalsis and defecation. Even when the intestines are inflamed, they have merely a soothing, not an irritating, action on the bowel. Both linseed and fleaseed swell under the influence of fluids, the latter the most, and this adds to the bulk of the feces and keeps them moist, while the mucilage of the seeds adds its action to that of the normal mucus in the gastro-intestinal tract. He relates the findings with comparative laboratory and clinical tests with these seeds, agar-agar, etc. He gave once or twice a day from 2 to 5 tablespoonfuls of the flax-seed, or from 2 to 4 teaspoonfuls of the fleaseed (Semen psylli). He warns not to bite the seeds.

87. **Pure Salicylic Acid in Acute Rheumatism.**—Zadek here concludes this study of the salicylates, based on 212 cases of their use in acute articular rheumatism. All his data confirm the advantages of pure salicylic acid rather than its salts. The first part of his article was summarized in these columns August 28, p. 834.

Zentralblatt für Gynäkologie, Leipzig

August 14, XXXIX, No. 33, pp. 571-586

89 Artificial Vagina Made from Rectum. (Fall von künstlicher Scheidenbildung.) H. Fehling.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 10, XXXVI, No. 55, pp. 849-864

90 *Pancreas Extract in Glucosuria from Pancreas Insufficiency. A. Massaglia.
91 Unreliability of the Landau Seroreaction in Syphilis. G. Recupero.
92 Alleged Hitherto Undescribed Part of the Hair Follicles. (Esistenza d'uno speciale sperone nei follicoli piliferi.) S. Giovannini.

90. **Pancreas Organotherapy for Guinea-Pigs with Glucosuria of Pancreatic Origin.**—Massaglia's experiments were not numerous but they showed that feeding pancreas extract to animals suffering from the consequences of insufficiency of pancreas functioning, arrested or attenuated the alimentary glucosuria already installed. When the pancreas extract was given with the sugar, no sugar appeared in the urine unless extraordinary amounts had been taken. By leaving even a small portion of the pancreas intact, it proved pos-

sible to ward off the experimental pancreatic diabetes. His findings justify, he thinks, pancreas extract treatment in clinical diabetes of the lean type.

Policlinico, Rome

August 15, XXII, No. 33, pp. 1089-1124

93 Subcutaneous Injections of Phenol in Tetanus and Sciatica. (Tetano traumatico guariti col metodo Baccelli.) E. Mondolfo, V. E. Ovazza and G. C. Rovatti.

94 Transportation of the Wounded in the Mountains. E. Mendes.

August, Surgical Section, No. 8, pp. 361-412

95 Experimental Pyocyaneus Osteomyelitis. G. Bolognesi.

96 *Retraction of Side of Chest as Sign of Pleural Effusion. (Il torace paradossale ed il suo trattamento chirurgico.) O. Cignozzi.

97 *Deviation of Complement with Echinococcus Disease. (La prova di Bordet e Gengou nella infestione echinococcica dell'uomo.) L. C. Zapelloni. Commenced in No. 7.

98 *Urea Test for Functional Capacity of the Kidneys. (La prova dell'azoturia, come metodo di esame della funzione renale.) E. Pirondini. Commenced in No. 5.

96. **The Paradoxic Thorax.**—This is the term applied by Follet to the retraction of the side of the chest in which there is a pleural effusion. The sound side is rounded out and resonant while on the side of the effusion the interspaces are narrow and the chest wall flat or concave. Follet ascribed it to a defensive reaction, a reflex contraction of half of the muscular coat of the trunk, like the muscular contraction over inflamed viscera. This paradoxic thorax sign pointed the way to effectual operative measures in a case described in detail by Cignozzi. A primary purulent pleuritis had entailed adhesions and deformation of the chest, retraction occurring instead of the bulging common with empyema. This experience demonstrates that this sign is an index of a purulent pleuritis with rapid absorption. In this case the walls returned to normal shape in less than three weeks after resection of the seventh rib and clearing out of the focus. By the end of the second month there was no further sign of anything abnormal. This special form of pleurisy with retraction of the chest wall thus calls imperatively for operative measures.

97. **Deviation of Complement in Echinococcus Disease.**—Zapelloni tabulates the findings of 108 cases and analyzes the experiences reported by others. In the tables the suspected affection and the actual affection found are compared. In the total 108 there were only two cases in which the reaction was positive and no echinococcus could be found, but in six cases echinococcus disease was discovered with a negative response to the deviation of complement test. In all the other cases (56) of certain echinococcus disease the test was strongly positive, and constantly negative in the nonechinococcus cases (44).

98. **Urea Test for Kidney Functioning.**—The first part of Pirondini's article was summarized in these columns last week. He regards test polyuria and test azoturia as remarkably instructive means to estimate the functional capacity of the kidney, but ranks the urea test far above the other. The principle of intensification of the natural and spontaneous elimination of a substance which is a normal ingredient of the urine he thinks is an ideal method for a test. Experimental polyuria is less instructive because both renal and extrarenal factors are involved in this. The urea output is less independent of the kidney functioning. The urea ingested in the test is eliminated in a curve which resembles that of the water in test polyuria. It shows less influence from position and from cirrhosis of the liver, but the curve reflects unerringly the condition in the kidneys. It may reveal impairment of function when the test polyuria seems to indicate satisfactory work on the part of the kidneys. It is most instructive in cases of disease of the bladder or prostate with secondary disturbance in kidney functioning; also in investigating the capacity of each and both kidneys with surgical kidney, and for testing the functioning of the remaining kidney after nephrectomy.

Riforma Medica, Naples

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99 Research on the Blood with Chorio-Epithelioma and Infiltrating Mole. S. Carpellani.

Brazil-Medico, Rio de Janeiro

July 22, XXIX, No. 28, pp. 217-224

100 Rat-Bite Disease in Boy of 10. (Verificação no Rio de Janeiro da molestia sokodu—Rattenbisskrankheit—devida a mordedura de rato.) C. Chagas.

Russkiy Vrach, Petrograd

XIV, No. 17, pp. 385-408

101 *Wounds of the Blood Vessels in War. N. A. Bogoraz.

102 Palpation of the Gastro-Intestinal Tract and Its Diagnostic Value. K. M. Rutkevich.

103 Foreign and Russian Mineral Waters. L. B. Bertenson.

104 *Coagulation of Blood; Herudinized Blood. V. S. Sadikoff and A. A. Lozinsky.

105 Billon's Arsenobenzol as Substitute for Salvarsan and Neosalvarsan. D. S. Chapin.

No. 18, pp. 409-432

106 Surgery During the Present War, and Suggestion for Movable Operating Rooms. M. I. Rostovzeff.

107 Pathogenesis of Polycythemia. A. B. Balaian.

108 Immobilization Dressing with Extension for Fractures of Humerus in War. V. I. Kairukshtis.

No. 19, pp. 433-456

109 *Salvarsan and Immunity in Experimental Syphilis. T. V. Verhitzky.

110 *War Psychoneuroses. S. A. Soukhanoff.

101. **Wounds of Blood Vessels.**—Wounds of the blood vessels, according to Bogoraz, are the cause of death in 30 per cent. of those who die on the battle-field. Of 3,500 wounded that could be transported to the base hospital, 0.5 per cent. had wounds of the blood vessels. A frequent result of these wounds was the formation of an aneurysm, arterial or arteriovenous, provided there was no infection. If infection sets in before the formation of the aneurysm, violent and usually fatal hemorrhage followed. The treatment consisted in suturing the wounded vessel. The sutures are applied in the same manner as on the skin. If the vessels are so lacerated that sutures can not be used, then the vessel must be ligated above and below the bleeding place, as near the latter as possible. The results with both methods—suturing of the wounded vessel and ligation—were very good. The treatment of the aneurysms depends on their age. Four of the 10 patients recovered completely; 2 others also recovered after amputation of the thigh, and 4 died. Bogoraz had the opportunity to treat 32 patients with wounds of blood vessels; 18 of the men completely recovered, 3 recovered after amputation, and 11 died, including 7 who succumbed to severe septicemia before the operation.

104. **Coagulation of Blood; Herudinized Blood.**—When the product of the glands of the mouth of a leech—called herudin by its discoverer—is added to the blood directly or injected hypodermically, the blood is herudinized and does not coagulate. Sheep's blood thus herudinized and diluted several times with normal salt solution remains uncoagulated and shows no signs of hemolysis. A 0.5 per thousand solution of ricin or abrin acts in a similar way. Complete hemolysis occurs, however, after addition of a 0.5 per thousand solution of solanin, and a little later coagulation takes place. This action of solanin is due to its dissolving the membranes of the red corpuscles which become hardened from the action of ricin and abrin. Rabbits' blood behaves differently: a 0.5 per cent. solution of ricin causes blood coagulation, but no hemolysis; 0.5 per thousand solution of abrin causes tardy coagulation, while solanin in a 0.5 per thousand solution immediately leads to coagulation of the blood and to hemolysis. The blood of the guinea-pig, cat and man coagulates under ricin (0.5 per cent. solution of ricin and 0.5 per thousand solution of abrin), but is not affected by solanin. Pigeon's blood coagulates only from the 0.5 per cent. solution of ricin. A 10 per cent. solution of sodium chlorid does not change the blood of sheep, rabbit, guinea-pig, or man, but transforms the blood of the pigeon, duck and chicken into a jelly-like mass. Therefore the response of the blood of different animals to the action of abrin, ricin, solanin and normal salt solution may serve for its differentiation.

These experiments of Sadikoff and Lozinsky also led them to think that the chemical properties of the membrane of the red corpuscles have some share in the process of blood

coagulation. As addition of herudin to the blood preserves the red corpuscles for some days, it is thus possible to preserve the latter for hemolytic reactions, such as the Wassermann test, for instance. Hence, the practical value of herudinized blood.

109. **Experimental Syphilis and Immunity.**—Verbitzky studied on white mice and rats the possible causes of the specific action of salvarsan and neosalvarsan. One of the possible causes is the accumulation of antibodies after the spirochetes have been destroyed by the salvarsan. These antibodies evidently contribute to the sterilization of the body, rendering it immune against new infections with the same virus. This immunity is but temporary, lasting only from four to fifteen days, and apparently is not transmitted to the offspring born during the immunity of the parent. The antibodies do not pass into the milk, or only in such small amounts as to be negligible.

110. **War Psychoneuroses.**—Soukhanoff does not admit that the war generates special psychoses which might be referred to a new definite group of mental derangement. Only the external manifestations of the usual psychoses may be modified; the essential, fundamental symptoms and signs remain unchanged. The most common psychoneurosis, the traumatic, appears in two forms: the commotional type, due to air concussion of the central nervous system, and the psychogenous, hysterical type, caused by the emotional shock. Then there also occur combined forms in which the symptoms of both these types are found. In some cases, the psychogenous hysterical phenomena complicate the clinical picture of an already existing neurosis, such as psychasthenia and epilepsy. Finally, it must be admitted that air concussion may cause anatomic changes in the viscera and the central nervous system, even without external lesions.

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July 24, II, No. 4, pp. 637-708

111 *Hemorrhage with Ruptured Tubal Pregnancy. (Over de bloeding bij verscheuring of doorgroeiing van den wand des zwangeren eileiders.) G. C. Nijhoff.

112 *Testing Color Sense with Colored Filter for the Light. (Onderzoek van den kleurzin met een eenvoudig kleurfilter.) G. F. Rochat.

113 **Antipyrin in Whooping Cough Convulsions.** W. Akkersdijk.

July 31, No. 5, pp. 709-784

114 Florentine Pathologist of the Fifteenth Century. (Antonius Benivenius van Florence.) B. W. T. Nuijens.

115 Modern Psychiatry, Neurology and Surgery of the Nervous System. L. J. J. Muskens.

116 *Danger from Retention of Heat in Delirium Tremens. (Warmtestuwing bij delirium tremens.) J. G. Schnitzler.

August 7, No. 6, pp. 785-856

117 *Diabetes Mellitus in Children. C. De Lange and J. C. Schippers.

118 Paralysis of Right Phrenic and Cervical Sympathetic Nerves. D. Klinkert.

119 Turpentine Poisoning; Recovery. (Terpentijnvergiftiging.) J. De Jongh.

111. **Hemorrhage with Ruptured Tubal Pregnancy.**—Nijhoff discusses the reasons why the hemorrhage in this condition keeps up so long. He explains it by the anatomic and physiologic features of the syncytium, as he relates in detail. It almost seems as if there were some ferment in the syncytium which impedes coagulation.

112. **Testing the Color Sense.**—Rochat passes the light through a colored fluid, and obtains innumerable gradations of the color by the following device: The square deep dish holding the colored fluid is made in two parts, bisected from corner to corner to form two triangles. The longer sides of the triangular dishes are placed in contact to form the perfect square. By drawing one a little farther along, the layer of colored fluid formed by the juxtaposed dishes becomes thinner, and the tint thus lighter. The tint can thus be varied at will. He has found a solution of pyoctaninum aureum the best adapted for the purpose. The light from an Auer light, passing through ground glass to diffuse it, then through a hole in a screen, and then through the colored fluid, shows red or green according to the thickness of the fluid, and at one point looks white. The apparatus is particularly instructive in testing railroad employees for quickness of perception of different colored signals. It discloses at once any weakness or weakening in the color sense. The conditions of the test are more like those encountered in actual practical life than with other tests. Rochat is privat-docent of ophthalmology at Utrecht, and the apparatus was devised for use at the Netherlands Eye Infirmary there. An illustration of it is given.

116. **Treatment of Delirium Tremens.**—Schnitzler reports in detail three cases of delirium tremens to emphasize the necessity for paying more attention to the temperature than is usually done. The temperature balance in delirium tremens is readily upset, and a fatal rise may be entailed by some of the therapeutic measures applied. In his cases the patients had been so agitated that warm packs were given. The pack in one case was ordered at a temperature of 28 C. In fifteen minutes the man was unconscious and his temperature had run up to 43 C., pulse 186, respiration 60. He was rapidly unpacked and given stimulants, with ice to the head. The temperature dropped to 42.2 C. the pulse to 160, and respiration to 42, but Cheyne-Stokes respiration developed and the man died in less than two hours after having been given the warm pack. The two other patients also died within a few hours after a tepid pack, but the temperature was not taken in these latter hours. There seems every reason to assume that the interference with the normal radiation of heat by the wet pack was responsible for the upset in the temperature balance. He theorizes to explain the mechanism of this in delirium tremens which, he remarks, is a psychosis on a gross organic basis. The nervous system is diseased not only from the psychiatric standpoint but from the neurologic as well. The heat center is liable to be suffering with the other parts of the nervous system. In treatment, the general condition, the heart action and the temperature must be constantly supervised. He suggests that it might be found useful to cool off the body at times in the course of systematic application of the continuous bath in treatment of delirium tremens.

117. **Diabetes in Children.**—De Lange and Schippers remark that between 500 and 600 cases of diabetes in children are on record, and they review the literature on the subject. Recovery was mentioned in only about 30 of the 500 cases, and these were not traced long. They have encountered 6 cases in the last eleven years among the 10,848 child patients admitted to the Emma Hospital during that period, and report 2 further cases from Pel's service. The details of these 8 cases are given in full. All terminated fatally. The duration of the disease was from eight or nine months to two years and five months in those cases in which the date of onset is mentioned. According to the older literature, a slight rise in temperature seems to have been common. In the more recent publications on the subject nothing is said of higher temperatures. Adult diabetics generally show a tendency to a low range of temperature. The older literature also refers occasionally to red corpuscles in the urine, but nothing of the kind is mentioned in the recent literature. Very high ammonia content of the urine is repeatedly mentioned in reports of cases of diabetes in children. In one of the personal cases reported it reached 8.2 gm. in the twenty-four hours' urine when the child was taking 30 gm. sodium bicarbonate. In conclusion they report a case of transient glucosuria in an infant of eleven months with febrile bowel trouble. Glucose, acetone and diacetic acid were found in the urine for a few days but soon disappeared as conditions returned to normal. The nineteenth day glucoronic acid was found transiently in the urine but after this there were no further disturbances. The authors comment on the especially grave prognosis of diabetes in children; one reason may be because it is so difficult to enforce the necessary dietetic restrictions for children as it is impossible to reason with them. Their patients were 2, 4, 5, 6, 8, 11 and 12 years old, half of them girls.

Hospitalstidende, Copenhagen

September 1, LVIII, No. 35, pp. 878-900

120 **Congenital Fistula in the Neck from Tonsil nearly to Clavicle.** O. Gjellerup.